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October 26, 2005

VIA HAND DELIVERY

Chairman John Minan
and Members of the California Regional Water
Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

Re: Request for Rescission of Cleanup and Abatement Order No. R9-2005-0017
Owner: Bulen Family Trust
Site: Lovett's One Hour Dry Cleaners
1378 East Grand Avenue
Escondido, CA
File No.: SMC: 02-0031.05: walsl
Agenda Item No.: 13 (November 9, 2005 Hearing)

Dear Chairman Minan & Members of the Board:

We represent the Bulen Family Trust, the owner of the property on which the business of Lovett's Dry Cleaners has been conducted at 1378 East Grand Avenue, Escondido, California. Enclosed herewith are the following:

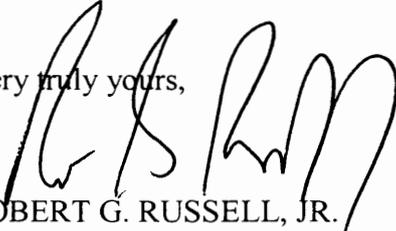
1. Request of the Bulen Family Trust for Rescission of Cleanup and Abatement Order No. R9-2005-0017;
2. Declaration of Tony V. Sawyer, a professional geologist employed by the County of San Diego Department of Environmental Health;
3. Declaration of Daniel C. Oliver, President of PIC Environmental Services; and
4. Documents submitted in support of the Request.

Chairman John Minan
and Members of the Board
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& Savitch
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We look forward to discussing this matter with you at the public hearing scheduled for November 9, 2005.

Very truly yours,



ROBERT G. RUSSELL, JR.

RGR/se
Enclosures

cc: Mr. John H. Robertus, Executive Officer

REQUEST OF THE BULEN FAMILY TRUST FOR RESCISSION OF CLEAN-UP AND ABATEMENT ORDER NO. R9-2005-0017

INTRODUCTION

The Bulen Family Trust ("Trust") respectfully requests that this Board consider Clean-Up and Abatement Order No. R9-2005-0017 for Discharges of Waste from 1378 East Grand Avenue, Escondido, and rescind such order.

After six years of investigation, monitoring and sampling of conditions at the property and after thorough analytical consideration by knowledgeable, experienced and professional San Diego County Department of Environmental Health ("DEH") personnel, DEH determined that conditions at the site were stable and posed no threat to public health or to the environment, including prospective uses of the groundwater and, on August 6, 2004, issued a determination that no further action was required with respect to those conditions. About one year thereafter the RWQCB Executive Officer issued a Clean-Up and Abatement Order ("CAO") mandating the preparation of a comprehensive "Site Investigation and Characterization Workplan," implementation of that workplan, preparation of a comprehensive "Site Investigation and Characterization Report," preparation of a "Feasibility Study," preparation of a "Remedial Action Plan," implementation of that Remedial Action Plan, monitoring, evaluating and reporting the results of the implementation of the Remedial Action Plan and preparation of a "Remedial Action Completion Report."

As will be demonstrated herein, issuance of the no further action determination by DEH was well-reasoned and appropriate, and the mandates of the CAO are excessive, unnecessary and redundant and will result in the needless expenditure of tens of thousands (and perhaps hundreds of thousands) of dollars.

SITE DESCRIPTION

The Trust is the owner of a commercial shopping center property identified as the Escondido Village and located at 1201-1390 East Valley Parkway and 1372-1378 East Grand Avenue, Escondido. The site is approximately 27 acres in size and is improved with five (5) buildings consisting of 266,000 square feet of rentable space and surrounding asphalt parking. The shopping center was originally constructed in 1963 and was substantially renovated in 1985. Tab 1 indicates the location of the center. Tab 2 is an aerial photograph depicting the center and the surrounding area.

One of the tenants of the center is Lovett's Dry Cleaners. The current operator of the dry cleaning facility has been there since 1994. It is believed that a dry cleaning facility has been operated at the site since the original construction of the center in the 1960s. The location of the facility is reflected at Tab 2.

HISTORY OF INVESTIGATIVE EFFORTS

A Phase I Environmental Site Assessment Report prepared for GE Capital Real Estate by Vertex Engineering Services ("Vertex") in August 1998 concluded that the presence and age of

the dry cleaning facility suggested a potential environmental concern and recommended further assessment.

Thereafter, Vertex conducted a "Limited Subsurface Investigation" in September 1998 by way of five (5) soil borings, four behind the dry cleaning facility near a solvent storage area and the dry cleaning machine, and one in front of the facility. Tetrachloroethylene (PCE), a solvent commonly used in dry cleaning operations, trichloroethylene (TCE) and cis-1,2-dichloroethylene were detected at varying concentrations in varying depths in the borings.¹

After discovery of the solvents in the soil, an application for assistance was submitted to DEH under DEH's "Voluntary Assistance Program" ("VAP"). The VAP is a voluntary program pursuant to which DEH staff provide consultation, oversight and technical expertise on projects related to properties contaminated with hazardous substances. As reflected at the DEH website: "The Department of Environmental Health will utilize its experience and knowledge of environmental assessment, clean-up and risk evaluation to facilitate rapid and cost-effective resolution of contamination problems." DEH assigned Mr. Jim Schuck, an Environmental Health Specialist, and Mr. Tony Sawyer, a professional geologist and certified hydrogeologist, to this project. Mr. Schuck counts more than 28 years in the waste management industry of which 20 years have been focused on site assessment (14 years with DEH), and Mr. Sawyer has been a professional geologist and a certified hydrogeologist evaluating hydrogeological issues associated with contaminants in soil and groundwater for more than 24 years, six of which have been with DEH. These individuals brought a wealth of practical experience, knowledge, including specific knowledge of conditions in the geographic area, and expertise to bear on this project over a period of some six years before coming to the conclusions that conditions had been adequately assessed, that the groundwater plume was stable and that the conditions posed no threat to health or to the environment, including the possible uses of the groundwater resources.

Over the course of the six-year investigation, analysis, monitoring and evaluation, substantial efforts were undertaken at the site under the oversight of DEH. A summary of those efforts follows:

1. Installation of Monitoring Well 1 (MW1) at the back of the facility. (February 1999)
2. Installation of 14 soil borings (in addition to the five previously done by Vertex), installation of MW2 and MW3 in front of the dry cleaning facility downgradient from the suspected area of release (the dry cleaning machine and/or the storage area at the rear of the facility) and the reconstruction of MW1. (March 1999)
3. Submittal of a comprehensive April 13, 1999 report of the results of the investigation requesting no further action by Bryant, Palmer, Soto Inc., consultants for La Caze

¹ Trans-1,2-dichloroethylene was also found in some borings. For convenience, this discussion will lump together cis-1,2-dichloroethylene and trans-1,2-dichloroethylene as dichloroethylene (DCE). Although the Clean-Up and Abatement Order (page 1, paragraph 3) indicates that PCE and TCE are solvents used in the dry cleaning process, it is believed that only PCE was used at this site and that TCE and DCE are simply break-down products of the PCE which was released at the site. (Oliver Declaration, ¶ 3.)

Development Company, the master tenant of the center. DEH was not satisfied that conditions had been adequately assessed and thus declined to issue a no further action determination and requested additional investigation.

4. Installation of a further downgradient well (MW4) at the request of DEH (June 1999). See Tab 3 for former locations of all monitoring wells. Because of the presence of structures, MW4 was installed north of the dry cleaning facility (though the groundwater gradient is to the northwest). MW4 was last sampled in June 2001. At that time the concentration of PCE in groundwater was found to be 15 ug/l, and no detectable concentrations of TCE or DCE were found.²

5. DEH requested that all wells be sampled, that the extent of the soil and groundwater contamination be delineated and that a determination be made as to whether any water wells existed in the area which might be drawing from the impacted groundwater. (November 2000)

6. In response to the request of DEH, a comprehensive Site Assessment Summary Report was prepared for DEH by PIC Environmental Services, the environmental consultant for the master lessee. (April 2001)

7. Following discussions with DEH, it was determined that another monitoring well, MW5, would be constructed downgradient from the source (to the northwest). This well was constructed in the parking lot immediately northwest of the shopping center structures which are located northwest of the dry cleaning facility. See Tab 3 for former location of MW5. (April 2003)

8. A comprehensive report, including the results of analysis of MW5, was submitted to DEH (August 2003).³ A copy of that report is attached at Tab 4.

9. DEH requested another round of sampling of the monitoring wells to ensure plume stability. (December 2003)

10. PIC Environmental Services submitted a comprehensive groundwater monitoring report to DEH (February 2004). A copy of that comprehensive report is attached at Tab 5.

11. A Request for Case Closure/No Further Action was submitted on May 18, 2004. A copy of that request is attached at Tab 6.

12. A No Further Action Determination was issued by DEH on August 6, 2004. A copy of that document is attached at Tab 7. In early June Mr. Schuck of DEH had verbally advised Mr. Danny Oliver of PIC Environmental Services that DEH was processing the file for closure. Accordingly, in June 2004, PIC submitted an application for a permit to abandon the four remaining monitoring wells (MW1, MW2, MW3 and MW5). A permit was issued on June

² MW4 was installed in a County Water Authority right-of-way for the San Jacinto – San Vicente aqueduct. The County Water Authority required that the well be removed in 2001. (Oliver Declaration, ¶ 4).

³ MW5 yielded low concentrations of PCE (18 ug/l) and DCE (5.9 ug/l) and no TCE. Subsequent sampling of MW5 in January 2004 yielded 11 ug/l of PCE and no TCE or DCE.

24, 2004, and all four wells were properly abandoned on September 8, 2004. There are no monitoring wells at the property at present. (Oliver Declaration, ¶ 4).

Over the course of almost six years more than \$110,000 has been expended on monitoring, sampling and reporting at this site.⁴ It was this significant investigation which lead DEH to the conclusion that the source of contaminants had been removed (the old dry cleaning equipment had been removed in 1994), that the extent of soil and groundwater contamination was adequately defined, that the plume of contaminated groundwater was stable and that the residual contamination did not pose an existing or potential threat to human health or to the reasonable utilization of groundwater resources.

THE CLEAN-UP AND ABATEMENT ORDER

A little more than one year after issuance of the No Further Action Determination by DEH, a Clean-Up and Abatement Order ("CAO") was issued by the Executive Officer of the Regional Board. The CAO mandates the following:

December 9, 2005 - Submittal of a Conceptual Site Model and a workplan for groundwater monitoring well installation.

Within 60 days thereafter – Implement the work plan.

April 10, 2006 – Submit a Site Investigation and Characterization Report.

June 9, 2006 – Prepare a Feasibility Study evaluating and recommending clean-up and abatement alternatives.

August 9, 2006 – Submit a Remedial Action Plan for the site.

October 9, 2006 – Implement the approved Remedial Action Plan.

December 11, 2006 – Submit a Final Remedial Action Completion Report.

Danny Oliver of PIC Environmental Services projects that compliance with the CAO could cost as much as \$540,000 to \$575,000 depending upon the amount of investigation and remediation ultimately required by RWQCB. Mr. Oliver concludes that even if active remediation ultimately is not required, the additional investigation, monitoring and reporting itself could cost as much as \$90,000 to \$125,000. (Oliver Declaration, ¶ 5). As will be demonstrated herein, such expense is simply not justified.

RESPONSE TO THE CAO

A number of the findings on which the CAO is based are simply not based on facts, science and/or common sense and do not support the issuance of the CAO. Each finding is discussed hereinafter:

⁴ Unlike costs of investigation and remediation of properties impacted as a result of releases of petroleum from underground storage tanks, none of these costs are reimbursed by a State fund.

(A) Finding No. 1 – Discharge of Solvent Waste. The Trust does not dispute the finding that there has been a discharge of solvent waste at the site. The Trust points out, however, that the concentrations of contaminants in soil alluded to in Finding 1 reflect the **maximum** concentrations of the contaminants detected at any single location. (See Tab 8 for a table of all soil sampling results, Tab 9 for a table of groundwater monitoring results, Tab 10 for the delineation of the extent of soil contamination and Tab 11 for the delineation of the extent of the groundwater plume.) For example, while PCE was detected at 55,000 ug/kg at a depth of about 14 feet in boring B-3, the highest concentration of PCE found at a similar depth in any other boring was 77 ug/kg (B-4). In fact, concentrations of PCE in soil borings toward the rear of the dry cleaning facility (where floor drains, the dry cleaning machine and the storage area are located) ranged from non-detect to 55,000 ug/kg. The CAO alludes to concentrations of TCE as high as 260,000 ug/kg. This is incorrect. The highest concentration of TCE observed was **260** ug/kg at a depth of two feet in B-2. (See Tab 8.)

However, the critical element of Finding No. 1 is the conclusion that the concentrations of PCE, TCE and DCE in groundwater have “created a condition of pollution and contamination in waters of the State” and have “also created or [threaten] to create a condition of nuisance in waters of the State.” Findings, pages 6 and 7. These conclusions are repeated in support of Finding No. 4 and will be discussed therein.

(B) Finding No. 2 – Persons Responsible. The Trust does not dispute this finding.

(C) Finding No. 3 – Waste Discharges. See discussion under Finding No. 1 regarding concentrations of contaminants in soil.

The basis for this finding appears to be that concentrations of contaminants in groundwater exceed applicable Water Quality Control Plan water quality objectives. There is no question that the present concentrations of contaminants in shallow groundwater at this site currently exceed Basin Plan objectives in some areas. However, that fact does not support the issuance of the CAO. In SWRCB Resolution 92-49 the State Board established policies and procedures for investigation and clean-up of discharges. In 1998 the State Board considered the question of whether site closure was appropriate at a time when concentrations of contaminants exceeded water quality objectives. The State Board concluded:

“Resolution 92-49 does not require, however, that the requisite level of water quality be met at the time of site closure. Even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable period (SWRCB Resolution 92-49, III.A.) ... The determination as to what constitutes a reasonable period must be based on evaluation of all relevant factors, including but not limited to the extent and gravity of any threat to public health and the environment during the period required to meet basin plan objectives. Although the time required to attain objectives in this case is lengthy, it is a reasonable period considering the facts of this particular case, including that there are no known drinking wells within 2,500 feet of the site, it is highly unlikely that TPH-g detected in localized areas in the immediate area of the UST’s discharge will migrate substantially beyond the current limited spatial extent, it is highly unlikely that this particular very limited

pocket of shallow groundwater will be used directly as a source for drinking water, and that even if the affected groundwater were used as a source of drinking water the TPH-g in that water would not pose any threat to public health.”

In the Matter of the Petition of Matthew Walker, Order WQ98-04-UST, State Water Resources Control Board (copy enclosed at Tab 12).

In the *Walker* matter the State Board recognized that concentrations of total petroleum hydrocarbons would likely exceed the Basin Plan objectives “for a significant period of time” which “**could be anywhere from a couple of decades to hundreds of years**” (emphasis added). Thus, it is undisputed that a site may be closed even though concentrations of contaminants presently exceed the maximum levels permitted under the Basin Plan and may exceed such for decades or centuries. The question is not whether the contaminants exceed MCLs; **the question is the extent and gravity of any threat to health and to the environment during the period required to meet the Basin Plan objectives.** Those threats could be intrusion into a drinking water supply, impacting a surface body of water or vapor impacts in structures. As has been adequately demonstrated, and as concurred in by DEH, none of those impacts, or potential impacts, exist here.

(D) Finding No. 4 – Basin Plan Prohibition Violation. The basis for this finding is that the discharge of this solvent contamination is “causing, or threatening to cause a condition of pollution, contamination or nuisance.” Review of the statutory definitions of these terms leads one to the inescapable conclusion that there in fact has been no demonstration that these shallow groundwater contaminants within the confines of this commercial shopping center property constitute a condition of pollution, contamination or nuisance:

1. “Pollution’ means an alteration of the quality of the waters of the state by waste to a degree which **unreasonably** affects either of the following:
 - (A) The waters for beneficial use.
 - (B) Facilities which serve these beneficial uses.”

Water Code Section 13050(1) (emphasis added).

The definition itself reflects a determination by the legislators that not every impact constitutes “pollution.” Rather, it is only those conditions which “unreasonably” affect the beneficial uses that constitute pollution. The beneficial use of concern as reflected in the CAO is the fact that groundwater in this vicinity has been designated as having a potential beneficial use as a municipal drinking water supply. As reflected in the declaration of Danny Oliver, only three (3) private production wells were identified within 3,000 feet of the site. Two (2) of the wells, W60522 and W60589, appear to have been destroyed in 1986-1987. One (1) well, W60775, is identified as having been located at 1400 Oak Hill Road. That address is currently occupied by Avanti Apartments which were constructed in 1991. Substantial evidence suggests that well is

no longer in use. Further, that property is located approximately 1,500 feet upgradient from the Lovett's Dry Cleaners site.⁵ (Oliver Declaration, ¶ 6)

The municipal water supply for this area is provided by the City of Escondido, Public Works Department, Water Division. Again, as reflected in the declaration of Mr. Oliver, water supply to the City of Escondido is provided through pipelines and aqueducts, and not from groundwater resources in the vicinity of the City of Escondido. The closest water production wells are believed to exist at Kit Carson Park, some three miles south of (i.e., upgradient from) the impacted property. In fact, Kit Carson Park is located in a different drainage basin entirely, and water production wells at Kit Carson Park would not be impacted by contaminants at this site.

As also reflected in the Oliver declaration, shallow groundwater in this area is generally characterized as poor or inferior due to relatively high concentrations of total dissolved solids (TDS), nitrate, sulfate and/or sodium chloride. See State of California, Department of Water Resources, Bulletin 118, Update February 27, 2004, attached to the Oliver Declaration.⁶ It also bears noting that the San Diego County Water Authority Groundwater Report, June 1997 does not identify any existing or planned projects for the utilization of groundwater in this area of Escondido.

The closest surface water is Escondido Creek which is almost 1,000 feet from the source area and approximately 500 feet north of the leading edge of the plume. Further, Escondido Creek in this area is a concrete lined channel.⁷

2. " 'Contamination' means an impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease...."

Water Code, Section 13050(k).

There has not been the slightest suggestion that this contamination has created "a hazard to public health through poisoning or through the spread of disease." In fact, PIC Environmental Services calculated and reported the potential health risk using an average PCE concentration for soil from vapor samples at 1.5 feet below ground surface collected by Bryant, Palmer, Soto, Inc. in April 1999 at the dry cleaning facility. The vapor risk evaluated based on an industrial land use resulted in a risk of 6.42×10^{-7} . Such a risk is well within acceptable guidelines.

⁵ No private wells may be constructed in the future without approval of the County. The County, as a matter of policy, will not approve the construction of private wells into impacted groundwater. Sawyer Declaration, ¶ 6.

⁶ For example, the concentration of total dissolved solids detected in a shallow groundwater sample collected in April 2001 at a nearby site located at 2015 E. Valley Parkway, Escondido, was 1,390 mg/l. The recommended state and federal drinking water standard for total dissolved solids is 500 mg/l.

⁷ It should be noted that groundwater in this area is already impacted with petroleum hydrocarbons. In fact, there are seven open or closed petroleum cases downgradient from this site, i.e., between the shopping center and Escondido Creek. In fact, one of these cases (Express Gas at 1266 E. Valley Parkway) had significant levels of MTBE in groundwater such that MTBE was actually being released into Escondido Creek through weep holes in the concrete lining. In short, the groundwater impacts in this area are not unique to the Lovett's Dry Cleaners location; rather, groundwater impacts are quite wide-spread downgradient from the dry cleaning location. Sawyer Declaration, ¶ 7.

3. “ ‘Nuisance’ means anything which meets all of the following requirements:

(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.”

Water Code Section 13050(m).

Again, there is no demonstration whatsoever that this isolated soil and groundwater impact is injurious to health, is offensive, obstructs the free use of the property, interferes with the comfortable enjoyment of the property or affects any single individual, much less an entire community. In fact, the demonstration which supports the No Further Action Determination is quite to the contrary. Unquestionably, this condition does not constitute a nuisance as that term is defined in the Water Code.

The CAO also suggests that the condition “threatens” to create a condition of nuisance in the waters of the state. “ ‘Threaten’, for purposes of this section, means a condition creating a substantial probability of harm, when the probability and potential extent of harm make it reasonably necessary to take immediate action to prevent, reduce, or mitigate damages to persons, property, or natural resources.” Water Code Section 13304(e). There is not even the slightest indication that this soil and shallow groundwater contamination isolated to this commercial property creates a “substantial probability of harm” such that it is “**reasonably necessary**” to take “immediate action” to prevent or mitigate damage. This is a stable plume which is going nowhere and harming no one. There is no “threat” of any kind. Unquestionably, there simply are no facts supporting a determination that these contaminants are causing, or threatening to cause, conditions of pollution, contamination or nuisance as defined in the Water Code, and, thus, there is no support for a determination that Waste Discharge Prohibition No. 1 of the Water Quality Control Plan is being violated, and no basis for issuance of the CAO. Water Code, Section 13304(a).

(E) Finding No. 5 – Site Investigation. The crux of the CAO appears to be that RWQCB staff disagree with the conclusions of PIC Environmental Services, conclusions concurred in by DEH, that the contaminants have been adequately assessed. The fact that the soil and groundwater contaminants have been adequately assessed is attested to by the reports documenting the findings in the course of the six-year investigation. See Tabs 8 through 11.

The specific allegations of the CAO with respect to the investigation, and responses to those comments, follow:

1. “Large distances (approximately 450 feet) exist between on-Site wells and the only remaining downgradient off-Site well.”⁸ (Findings, page 10.) First, a well was installed between the source and MW5, that well being MW4 approximately 300 feet north of the site (there is no dispute that this well is slightly off-gradient, as the gradient is to the northwest; however, as reflected at Tab 3, the well was placed in the best available location.) It is true that MW5 is located approximately 450 feet downgradient. However, again as reflected at Tab 3, shopping center buildings are located between the source area and MW5. MW5 is located in the parking lot at the first available location downgradient. Installing wells inside retail shops or inside the Escondido Union School District offices is neither practical nor advisable.

2. “[T]here are no wells to either the north or south of this assumed plume center-line to provide adequate definition of the plume.” (Findings, page 10.) Clearly, MW4 which was located north of the center line of the plume adequately defines the extent of the plume in that direction. While there is no well to the south, one must question the rationale for the requirement of such a well when the consultant and DEH are confident that the flow of groundwater is to the northwest, not to the south (in fact, all seven of the petroleum cases presently or previously opened by DEH in this vicinity reflect the general northwesterly groundwater gradient), and even if the plume extends toward the south at all, it is still within the shopping center property under buildings and parking lots, i.e., there are no receptors or users of groundwater in that area. Thus, the expense of installing groundwater monitoring wells in areas of no consequence cross-gradient is simply unjustified.

3. “Vertical delineation of the plume at the Site is also incomplete” (Findings, page 10). First, contrary to statements made in the CAO, the groundwater monitoring wells at the site were constructed in accordance with DEH criteria. Standard B.1.H. in the DEH SAM manual provides that the screened length of a well “should not exceed 10 to 15 feet **into the saturated zone**” (emphasis added). None of the wells which formerly existed at this site were screened more than 10 to 15 feet in the saturated zone. (Sawyer Declaration, ¶ 8.) DEH is confident that the wells were adequate for the delineation of the characteristics of the plume. (Sawyer Declaration, ¶ 8.) While chlorinated solvents are heavier than water, there has been no evidence whatsoever of any free phase, undissolved solvents at this site. Rather, all solvents are dissolved in groundwater and thus do not have densities heavier than groundwater. (Sawyer Declaration, ¶ 4.) As such, there is not a concern of solvents “sinking” in groundwater. Further, borings and well construction at the site reflected a layer of decomposed granite at the site at a depth of about 21 feet which resulted in refusal with respect to a number of the soil borings. Groundwater at the site is stratified with slow vertical migration on account of the decomposed granite layer. (Sawyer Declaration, ¶ 4.)

Note that fluctuating groundwater concentrations in the heart of the plume (i.e., MW2 and MW3) are of little relevance on account of the fact that groundwater levels in the area have been observed to fluctuate a foot or two during the six years of investigation. Obviously, as groundwater fluctuates, concentrations of contaminants in the groundwater in that immediate vicinity of the plume may increase. Of critical importance, however, is the fact that even though groundwater levels have fluctuated thereby resulting in ups and downs in the concentrations of

⁸ There are no “remaining” monitoring wells. All wells were properly abandoned in September 2004 after issuance by DEH of the No Further Action determination and approximately one year before issuance of the CAO.

PCE in groundwater immediately under the dry cleaning facility, the concentration of PCE at the leading edge of the plume (MW5) has not shown similar increases and in fact reflected a decrease between the times of the July 2003 and January 2004 sampling events.

4. “The Regional Board cannot conclude that delineation of the extent of waste deposited to soil in the vertical direction is complete....” (Findings, page 11.) The staff report notes that significant concentrations of PCE were found at the deepest point in four specific borings (B3, B5, B7 and B10). What staff fails to note, however, is that other borings in the same area, B2 at 17 feet (nondetect for PCE), B4 at 14 feet (77 ug/kg), B6 at five feet (nondetect), B8 at five feet (nondetect), B9 at five feet (nondetect for PCE), B12 at five feet (326 ug/kg), B14 at five feet (180 ug/kg), B15 at five feet (6 ug/kg), B16 at five feet (6 ug/kg), B17 at ten feet (12 ug/kg), and B18 at ten feet (nondetect), yielded substantially lower concentrations of contaminants. Thus, there is substantial evidence that the extent of soil contamination has been adequately delineated vertically. Again, it must be emphasized that because the plume is stable and is isolated to the site, the soil contaminants are of little consequence, as they are not causing an expanding plume, i.e., to the extent contaminants from soil are feeding into groundwater, the contaminants in groundwater are naturally biodegrading at the same rate such that the plume is not expanding. That the plume is not expanding is clearly demonstrated by the two sampling events at MW5 approximately six months apart reflecting a concentration of PCE on July 16, 2003 of 18 ug/l and a concentration of that constituent on January 9, 2004 of 11 ug/l; similarly, concentrations of DCE during that period decreased from 5.9 ug/l to nondetect; concentrations of TCE in both sampling events were nondetect. In other words, the plume is stable and not expanding, a clear indicator that processes of natural biodegradation are at work stabilizing the plume.⁹

(F) Finding No. 6 – Clean-Up and Abatement Actions. The Trust does not dispute the finding that no clean-up actions have been undertaken at this site. The fact is: **No clean-up actions have been undertaken, as six years of investigation clearly indicated that no clean-up was required.** Simply stated, there would be no tangible benefit to public health, to the environment or to reasonably useable water resources by doing any cleanup. This Board may require clean-up when a waste discharge impacts groundwater such that it creates a condition of pollution, contamination or nuisance or threatens to create such. Clearly such is not the case here:

- (i) The plume is confined to this commercial property, virtually all of which is overlain with buildings and parking lots.
- (ii) The soil and groundwater contamination pose no unacceptable health risk.

⁹ It should be noted that if in fact this plume were going to move further to the northwest downgradient, it would have done so before now. This plume is more than 10 years old. As the CAO notes, there have been no releases since the equipment was changed out in 1994. Additionally, service stations located or formerly located northwest of the property across East Valley Parkway (i.e., between the site and Escondido Creek) engaged in dewatering operations for a number of years to remediate petroleum and MTBE contaminants released from those sites. Thus, if a plume of contamination was going to migrate further to the northwest toward Escondido Creek, it would have done so during the dewatering operation not at this time when the dewatering has been terminated. (Sawyer Declaration, ¶ 7.)

- (iii) No one is using groundwater within at least 3,000 feet of this site.
- (iv) The closest public water distribution wells are more than three (3) miles up-gradient from the site, and shallow groundwater in this area is not suitable as a drinking water source by virtue of the fact that the water contains unsuitable high levels of total dissolved solids.
- (v) The plume, which was caused by a release more than 10 years ago (i.e., prior to the installation of new equipment in 1994), is adequately defined and is stable.

As PIC Environmental Services concluded, a conclusion with which DEH concurred, there simply is no rational basis to require clean-up of soil or groundwater contamination at this site. Clean-up for the sake of clean-up is nonsensical. Removal of some 1,300 tons of impacted soil at a cost approximating \$325,000 defies logic and common sense. Exposing contaminated soils in the course of clean-up itself creates a much greater risk than simply leaving it in place capped by soil, asphalt and slabs. Further, impacting already limited landfill space by removal of significant quantities of contaminated soils while providing minor, if any, water quality benefits is to be avoided. See *In the Matter of the Petition of Ernest Panosian* (Order WQ2004-0018-UST), a copy of which is attached at Tab 13.

Similarly, in its decision *In the Matter of the Petition of Dan Thomas* (Order WQ2005-0008-UST), a copy of which is attached at Tab 14, the State Board overturned the Regional Board's rejection of a request for closure, finding that there was no threat to human health or safety or to the environment and no adverse affect on current or anticipated beneficial uses of water because (1) the groundwater at, and immediately down-gradient of, the site was not being used, and there was no likelihood that it would be used in the future, for domestic or municipal purposes, and (2) natural attenuation would lower the concentrations of residual TPH in the groundwater. Given these facts, the State Board found that it was economically unreasonable to require the excavation of 550 cubic yards of contaminated soil at a cost of approximately \$100,000.

In still another case the State Board found that the fact that it could take several decades for identified contaminants to meet water quality objectives was reasonable because of (1) the poor quality of the shallow groundwater, (2) the fact that there were no water supply wells within 2,700 feet of the site, (3) the fact that the nearest surface water was 900 feet away and (4) the fact that there was no threat to water in the deeper aquifer. *In the Matter of the Petition of Michael O'Donoghue Trust* (Order WQ2003-001-UST), attached at Tab 15. See also *In the Matter of the Petition of Lois Green and Patricia Kelly* (Order WQ2005-0002-UST), attached at Tab 16 (the time period for a reduction of concentrations of TPH by processes of natural attenuation would be met "anywhere from a few decades to hundreds of years.")

(G) Finding No. 7 – Legal and Regulatory Authority. The Trust does not dispute the legal and regulatory authorities cited.

(H) Finding No. 8 – CEQA Exemption. The Trust does not dispute the finding that this action is exempt from CEQA.

CONCLUSION

In summary, the following facts support this application of the Trust for consideration and rescission of the Clean-Up and Abatement Order by this Board:

1. Groundwater monitoring data collected from 1998 through 2004 reflect that the contaminated plume is adequately assessed, is stable and is isolated to this commercial property.

2. Additional investigation, groundwater monitoring and reporting are not likely to yield any data which is substantively different from the data already collected. (Oliver Declaration, ¶ 5; Sawyer Declaration, ¶ 9.)

3. For more than six years, DEH provided regulatory oversight for this investigation. That oversight was provided by Jim Schuck, a DEH environmental professional, and Tony Sawyer, a professional geologist and a certified hydrogeologist, who have more than 52 years of combined experience dealing with issues of contaminated soil and groundwater.

4. No groundwater users are, or will be, impacted by these contaminants in groundwater in this area. No private wells have been identified within 3,000 feet of the plume. No public water authority is drawing water from this shallow groundwater and none have any plans to do so. Standard well construction practices, including the requirement for county approval of locations and construction of all such wells, will ensure that no future wells will be installed which may be impacted by this isolated plume. (Sawyer Declaration, ¶ 6.)

5. Processes of natural attenuation are the appropriate remedial option for this site, as determined by DEH.

6. Following the six years of investigation, DEH concluded that no further action was required at this site because there was no threat to human health or to the beneficial uses of groundwater resources.

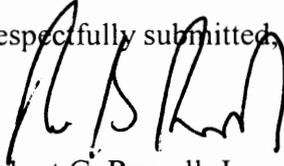
7. Conditions at this site do not constitute conditions of "pollution, contamination or nuisance" and thus do not justify issuance of the CAO.

8. More than six years and over \$110,000 has been expended investigating and monitoring the site. Unlike petroleum sites, none of this expenditure will be reimbursed by any State fund.

9. Costs to implement the mandates of Clean-Up and Abatement Order No. R9-2005-0017 could run into the hundreds of thousands of dollars.

Accordingly, it is respectfully requested that this Board rescind Clean-Up and Abatement Order No. R9-2005-0017.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'RGR', is written over the text 'Respectfully submitted,'.

Robert G. Russell, Jr., of
Procopio, Cory, Hargreaves & Savitch LLP
Attorneys for The Bulen Family Trust

DECLARATION OF TONY V. SAWYER

I, Tony V. Sawyer, declare as follows:

1. I am a professional geologist, a certified engineering geologist and a certified hydrogeologist licensed by the State of California. I have been a registered/professional geologist for the past 24 years and have been employed as a hydrogeologist by the County of San Diego Department of Environmental Health since 1999. I have been involved with groundwater sites, including sites with contaminated soil and groundwater, for my entire 24-year career.

2. I am the professional geologist/certified hydrogeologist who was assigned responsibility for this site by DEH. As such, I worked closely with Jim Schuck, the Case Manager, assessing site conditions for purposes of ensuring that such conditions posed no unreasonable threat to health or to the environment.

3. DEH issued a no further action determination at this site on August 6, 2004, after some six years of investigation, monitoring, analysis and reporting of conditions at the site. The no further action determination was issued only after I was satisfied that conditions had been adequately assessed, that the extent of soil and groundwater contamination had been adequately delineated and that contaminants remaining in soil and groundwater posed no unreasonable threat to health or to the environment.

4. A significant part of my job is to ensure that contaminants in groundwater do not pose a risk to users or prospective users of that groundwater. There are no current users of the shallow groundwater at this site, and, to the best of my knowledge, there are no plans for such use. As reflected in the Declaration of Mr. Oliver, there are no private groundwater wells within 3,000 feet of the site. Soil borings and well construction data at the site indicate that at a depth of approximately 21 feet there is a layer of decomposed granite which ensures that vertical migration of groundwater is extremely slow at best. Further, because all of the PCE detected at this site was dissolved in groundwater, there is no reason to believe that there would be any great degree of vertical migration. Concern of vertical migration exists principally when the PCE (which is heavier than groundwater) is not dissolved in groundwater.

5. As is reflected in the various documents submitted herewith, DEH required considerable work at this site before determining that it could concur with the conclusion that the site had been adequately assessed and that no further action was appropriate. In fact, in 1999 no further action was requested, and DEH refused such based on its conclusion that the site had not been adequately assessed to support the conclusion that no unreasonable risk was presented by the soil and groundwater contamination at the site.

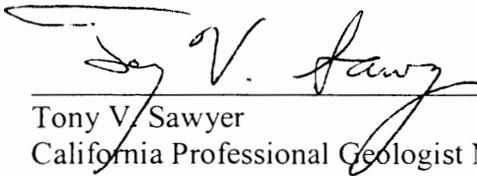
6. There is no risk that new private wells will be installed in this contaminated plume. First, the plume is isolated to the shopping center property, and there is no reason to believe that the shopping center owner would ever install a well. Further, the County must approve the locations of all new private water wells, and the County does not approve siting of private water wells in areas of impacted groundwater.

7. Historically, there have been seven files opened at DEH on account of releases of petroleum products to groundwater down-gradient of this shopping center site, i.e., between the shopping center and Escondido Creek. Four of those matters remain open, while three have been closed. Significant levels of petroleum contamination and MTBE were observed in soil and groundwater at certain of those sites. One site, Express Gas located at 1266 East Valley Parkway, virtually down-gradient from the dry cleaning site, resulted in a discharge of MTBE through weep holes in the concrete-lined Escondido Creek Channel for a period of time. This historical discharge was fully known to staff of RWQCB. Clearly, the shallow groundwater immediately down-gradient of the dry cleaning site is significantly impacted with total petroleum hydrocarbons and MTBE.

8. To my knowledge, the five monitoring wells installed at this site were installed in accordance with DEH guidelines. DEH guidelines specify that wells are to be constructed with no more than 10 to 15 feet of screened length "in the saturated zone." See portion of Appendix B to the DEH SAM Manual attached hereto. None of these wells exceeded that standard. In my opinion, the groundwater data obtained from the monitoring wells is both accurate and dependable with respect to concentrations of contaminants in that water.

9. In my professional opinion, based on 24 years of experience, this site has been adequately assessed, and DEH's determination that no further action is required is the correct determination based on our conclusions that the site poses no unreasonable threat to health or to the groundwater resources. In my opinion, the installation of additional soil borings and wells will not yield any data significantly different from the data which was obtained over the course of the six-year investigation and will not alter the conclusions reached by the professionals retained by the responsible party and by the professionals at DEH that conditions at the site are adequately assessed and pose no threat.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration was executed on October 25, 2005, at San Diego, California.



Tony V. Sawyer
California Professional Geologist No. 4345

B. Standards

1. Well Construction

- a. Vadose and groundwater wells must be designed by a Registered Geologist, Registered Civil Engineer, or Certified Engineering Geologist.
- b. The well identification number and well type should be permanently affixed to the exterior of the well security structure.
- c. Well casing should be flush-threaded. Use of organic solvents or cements is not acceptable. All well casing should have a bottom cap or plug.
- d. Monitoring well casing diameter should not be less than 2 inches or greater than 6 inches, unless specifically approved by DEH.
- e. The casing must extend a minimum of three inches above the interior seal.
- f. The following are minimum boring diameters for the respective casing sizes:

Casing I.D.	Minimum Boring Diameter
2 inches	6 inches
4 inches	8 inches
6 inches	10 inches

In general, casing sizes must have a minimum borehole diameter 4 inches greater than the proposed casing. Under prescribed conditions, a small diameter well variance may be permitted, refer to D. in this appendix.

- g. Well screen and blank casing should be suspended from the ground surface and not allowed to rest on the bottom of hole during well construction. When casing is installed in a hollow-stem auger hole, centralizers are not required because the auger centers the screened casing. In borings that do not have the hollow-stem auger in the hole at the time of casing installation, centralizers should be placed from the bottom up, every 20 feet on screen sections greater than 20 feet in length and every 40 feet on the blank portion of the well casing. For well casing with a screened interval of less than 20 feet in length, centralizers should be placed on the top and bottom of the screened interval, and every 40 feet on the blank portion of the well casing.
- h. Wells that are designed to evaluate water table conditions should be designed and constructed to provide sufficient length to accommodate expected seasonal or tidal groundwater fluctuations and should extend a minimum of 2 feet above the top of the saturated zone. Generally, the screened interval length should not exceed 10 to 15 feet into the saturated zone. If deeper sections of the aquifer will be investigated, or the well is going to be used for dewatering or remediation purposes, then design considerations should be discussed with DEH and the lead agency on a site-specific basis.
- i. Groundwater wells should be constructed with a filter pack. The filter pack should extend to at least 2 feet above the top of the screened interval. Depending on site conditions, the filter pack may need to be tremied into place. When using a hollow-stem

DECLARATION OF DANIEL C. OLIVER

I, Daniel C. Oliver, declare as follows:

1. I am a professional geologist certified by the State of California and am the president of PIC Environmental Services. I have more than 19 years of experience investigating and remediating contaminated properties. PIC Environmental Services was hired by La Caze Development Company, the master tenant of the Escondido Village Shopping Center located at 1201-1390 East Valley Parkway and 1372-1378 East Grand Avenue, Escondido in about December 2000. Previously, environmental investigatory work had been done at the site for La Caze by Bryant, Palmer, Soto, Inc.

2. Since about December 2000, I have been the officer of PIC Environmental Services primarily responsible for activities at the site. I was personally involved in the investigation, monitoring and reporting from December 2000 until DEH issued the no further action determination in August 2004.

3. In various soil borings and groundwater samples, PCE, TCE and/or DCE were encountered. In my professional opinion, the PCE is the solvent which was used at the site in dry cleaning operations. The TCE and DCE encountered are break-down products of PCE evidencing the fact that the processes of natural attenuation are at work.

4. In June 2004 I was informed by Jim Schuck of DEH that DEH was processing the matter for closure. Accordingly, in June 2004 I submitted an application to the County for a permit to abandon the four monitoring wells on site (MW-1, MW-2, MW-3 and MW-5). MW-4 had been abandoned in 2001 at the request of the County Water Authority since the well had been installed with the consent of the County Water Authority in a right-of-way owned by the County Water Authority. DEH issued its no further action determination in August 2004, and the four monitoring wells were destroyed on September 8, 2004. It was necessary to proceed expeditiously to destroy the wells, as the permit expired on October 22, 2004.

5. I have reviewed the requirements of the Cleanup and Abatement Order. In my opinion, the cost of implementation of the site investigation and characterization, preparation of the feasibility study and preparation of the remedial action plan alone will cost between \$90,000 and \$125,000. This, of course, assumes that no active remediation is required. If in fact active remediation is required, I estimate that the cost for soil remediation alone, i.e., removal of approximately 1,300 tons of impacted soil, followed by monitoring of groundwater (i.e., no active remediation of groundwater) with preparation of a final report will be approximately \$450,000. In my professional opinion, additional investigation at this site will not yield any data appreciably different from that already obtained. In my opinion, the extent of soil contamination and groundwater contamination have been adequately delineated such that it can be reasonably concluded that the plume is stable and is naturally bio-attenuating.

6. I have reviewed the County's listing of private production wells located within 3,000 feet of the site and identified three potential wells. Two of the wells, W-60522 and W-60589, were listed on East Valley Parkway. The County files reflect that both wells were apparently destroyed in 1986 or 1987. Well W-60775 is listed at 1400 Oak Hill Road. I

investigated that location which is presently improved with the Avanti Apartments constructed in 1991. On-site property managers were unaware of any wells at the property and indicated that the property is serviced by the City of Escondido Water Division. This property is located approximately 1,500 feet up-gradient from the Lovett's Dry Cleaners site.

7. I personally talked with Mr. Rob Ridgway of the City of Escondido, Public Works Department, Water Division regarding Escondido's municipal water supply. Mr. Ridgway indicated that a relatively small volume of water is supplied from groundwater extraction and that he believed the nearest public wells drawing from groundwater were located at Kit Carson Park, approximately three miles south of the subject property. Kit Carson Park is located in a separate drainage basin (San Dieguito Lagoon) from the drainage basin in which the shopping center is located (San Elijo Lagoon). Thus, any water production wells at Kit Carson Park will not be impacted by the plume from the dry cleaning facility.

8. Shallow groundwater quality in the Escondido Valley Groundwater Basin is generally characterized as poor or inferior due to relatively high concentrations of total dissolved solids (TDS), nitrate, sulfate and/or sodium chloride. See State of California, Department of Water Resources, Bulletin 118, update February 27, 2004, attached hereto. Concentrations of TDS in a shallow groundwater sample collected in April 2001 at a nearby service station site located at 2015 East Valley Parkway, Escondido, reflected concentrations of TDS at 1,390 mg/l, some 890 mg/l greater than the federal and state recommended levels (500 mg/l) for a drinking water supply.

9. At the request of DEH, PIC calculated and reported the potential health risk posed by contaminants at the site using an average PCE concentration for soil from vapor samples at 1.5 feet below ground surface collected by Bryant, Palmer, Soto, Inc. in April 1999 at the dry cleaning facility. The vapor risk evaluated based on an industrial land use resulted in a risk of 6.42×10^{-7} . Such risk was well within acceptable guidelines.

10. In my opinion, there is no ongoing source of contaminants to soil, as the equipment which is believed to have resulted in the discharges was replaced in 1994 at the time a new operator took possession of the premises. There is no evidence of any releases since 1994. In my further opinion, the groundwater plume is stable, and contaminants in that plume will be remediated through processes of natural attenuation. Further, the plume is isolated to the shopping center property, and poses no risk whatsoever to Escondido Creek. In my opinion, the six-year investigation at this site has adequately delineated the extent of soil and groundwater contamination at this site such that the no further action determination is appropriate.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration was executed on October 25, 2005, at Solana Beach, California.



Daniel C. Oliver
California Professional Geologist No. 4781

Escondido Valley Groundwater Basin

- Groundwater Basin Number: 9-9
- County: San Diego
- Surface Area: 2,890 acres (4.5 square miles)

Basin Boundaries and Hydrology

The Escondido Valley Groundwater Basin underlies a northeast trending valley drained by Escondido Creek located in central San Diego County. The contact of residuum with impermeable Cretaceous granitic rocks and pre-Cretaceous metamorphic rocks bound the basin. Average annual precipitation ranges from 11 to 15 inches.

Hydrogeologic Information

Water Bearing Formations

The primary water-bearing deposits include Quaternary age alluvium and residuum. Quaternary alluvium is confined to the course of Escondido Creek and is probably not thick enough to be water bearing. Groundwater production in this basin is largely from residuum, however many wells extract groundwater from fractures in the underlying crystalline rocks (DWR 1967). Groundwater is generally found at less than 50 feet in depth (DWR 1967).

Groundwater Level Trends

Not determined.

Groundwater Storage

Groundwater Storage Capacity. The estimated total storage capacity is 24,000 af (DWR 1975).

Groundwater in Storage. Unknown

Groundwater Budget (Type C)

Not enough information is available to construct a budget.

Groundwater Quality

Characterization. Groundwater in this basin is generally sodium chloride in type, with subordinate amounts of magnesium, calcium, bicarbonate, and nitrate ions (DWR 1967). TDS content ranges from 250 to more than 5,000 mg/L (DWR 1967).

Impairments. Local sources of groundwater in this basin are categorized as suitable to inferior for domestic use. The water categorized as inferior typically contains high nitrate, TDS, or sulfate content (DWR 1967).

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: max = 190 gal/min	Average: 50 gal/min. (DWR 1975)
	Total depths (ft)	
Domestic	Range:	Average:
Municipal/Irrigation	Range:	Average:

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
	Groundwater levels	
	Miscellaneous water quality	
Department of Health Services and cooperators	Title 22 water quality	1

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

California Department of Water Resources (DWR). 1967. *Ground Water Occurrence and Quality, San Diego Region*. Bulletin 106-2. 233 p.

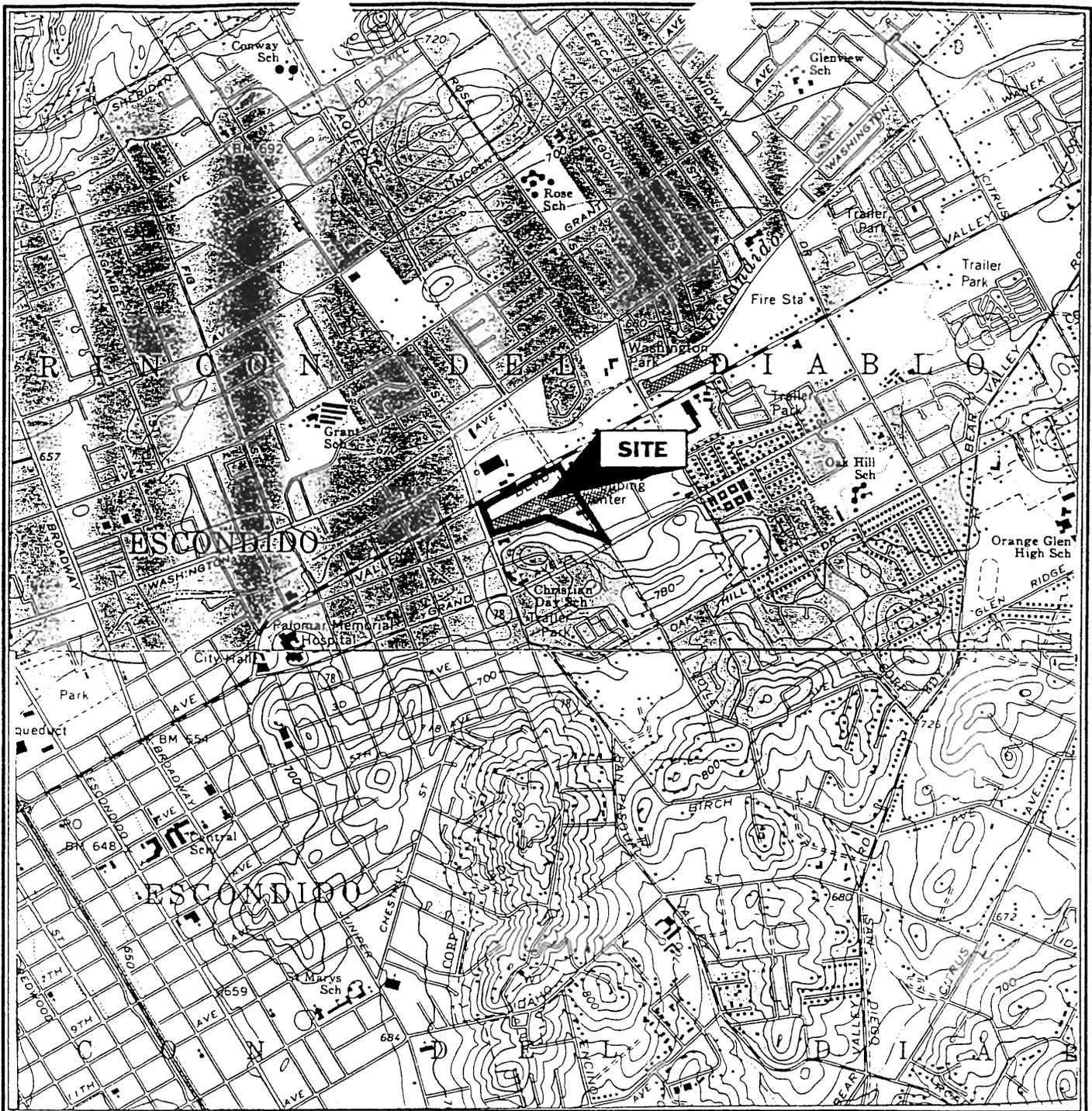
_____. 1975. *California's Ground Water*. Bulletin 118. 135 p.

Errata

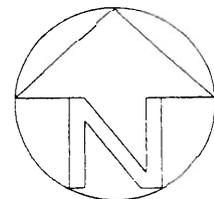
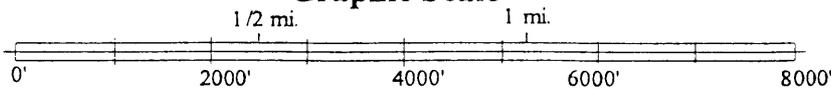
Substantive changes made to the basin description will be noted here.

INDEX OF EXHIBITS

1. Figure reflecting location of shopping center
2. Aerial photograph of shopping center identifying location of Lovett's Dry Cleaners
3. Figure reflecting former locations of all monitoring wells
4. PIC Environmental Services Groundwater Monitoring Well Installation and Monitoring Report dated August 20, 2003
5. PIC Environmental Services Groundwater Monitoring Report dated February 26, 2004
6. PIC Environmental Services Request for Case Closure/No Further Action dated May 18, 2004
7. County of San Diego Department of Environmental Health No Further Action Required Determination dated August 6, 2004
8. Soil analytical results
9. Groundwater analytical results
10. Site Plan showing soil analytical data
11. Site Plan showing inferred dissolved PCE plume in groundwater
12. State Water Resources Control Board decision *In the Matter of the Petition of Matthew Walker*
13. State Water Resources Control Board decision *In the Matter of the Petition of Ernest Panosian*
14. State Water Resources Control Board decision *In the Matter of the Petition of Dan Thomas*
15. State Water Resources Control Board decision *In the Matter of the Petition of Michael O'Donoghue Trust*
16. State Water Resources Control Board decision *In the Matter of the Petition of Lois Green and Patricia Kelly*



USGS Topographic Map
 Valley Center, CA Quadrangle
 Contour Interval: 20 feet
Graphic Scale



SITE LOCUS MAP

Escondido Village
 1201-1390 East Valley Parkway
 Escondido, California

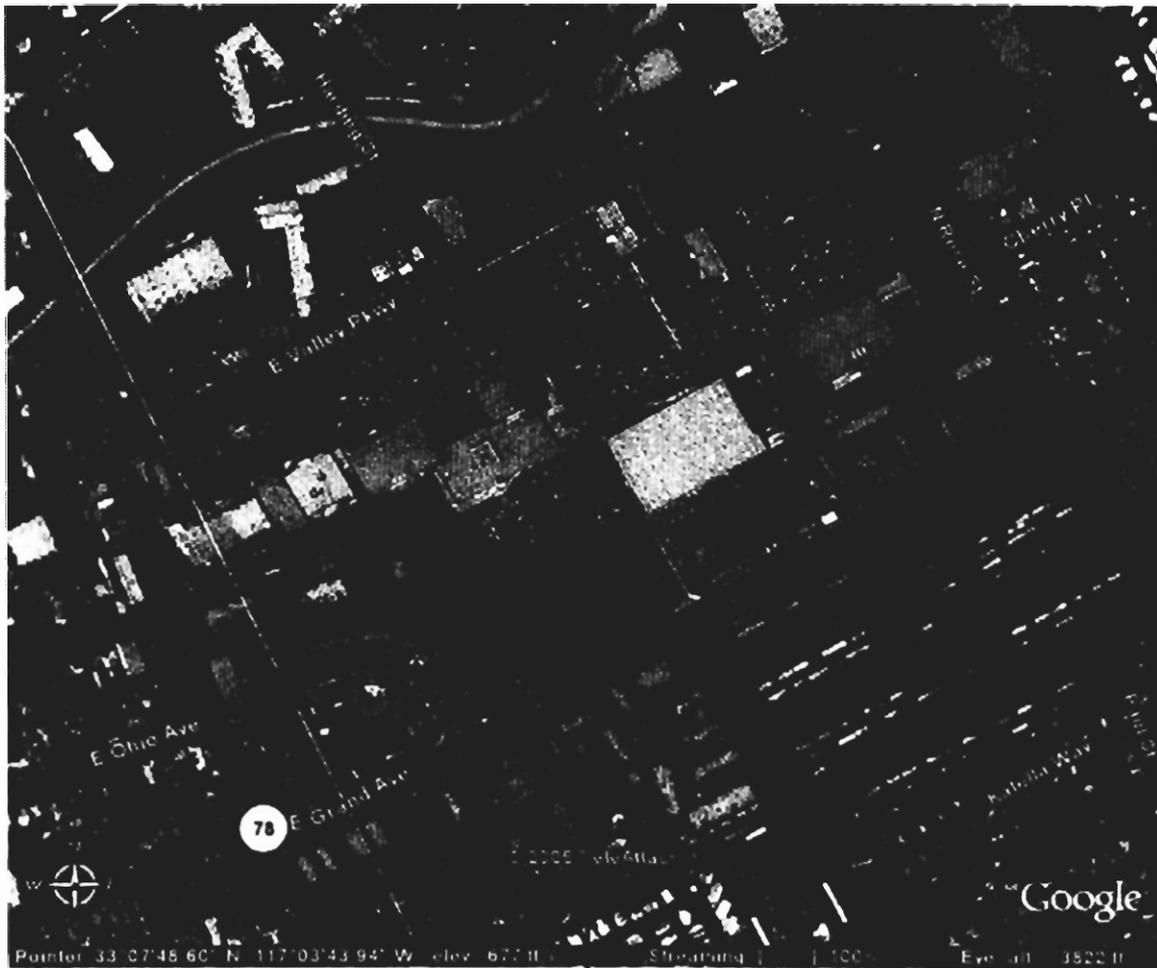
SCALE: AS SHOWN

August 17, 1998

VERTEX Proj No.: 1070

VERTEX

FIGURE NO. 1



Site

Lovett's Dry Cleaner Site
1378 E. Grand Avenue, Escondido, CA 92027
H11085-001

EXPLANATION

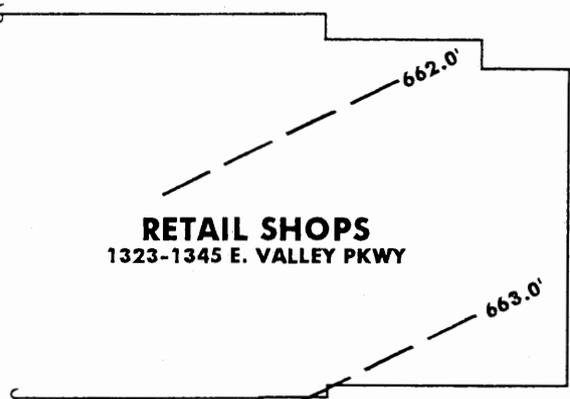
-  GROUNDWATER MONITORING WELL
-  ABANDONED GROUNDWATER MONITORING WELL
-  INFERRED GROUNDWATER FLOW DIRECTION



MW5	
GW Elevation (ft)	661.25
PCE (ug/l)	11
TCE (ug/l)	ND
DCE (ug/l)	ND

MW5

RETAIL SHOPS
1323-1345 E. VALLEY PKWY

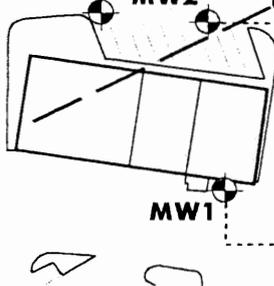


ESCONDIDO UNION SCHOOL DISTRICT OFFICES
1330 E. GRAND AVE

MW3	
GW Elevation (ft)	664.67
PCE (ug/l)	8,700
TCE (ug/l)	400
DCE (ug/l)	1,800

UNITED CEREBRAL PALSY
1390 E. GRAND AVE

MW3 MW2



FORMER FEDCO BUILDING
1475 E. VALLEY PKWY

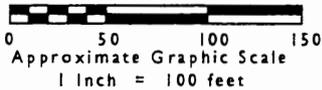
MW2	
GW Elevation (ft)	664.96
PCE (ug/l)	6,200
TCE (ug/l)	240
DCE (ug/l)	1,400

FORMER TUTOR TIME
1411 E. GRAND AVE

CENTERLINE OF 80 FOOT RIGHT OF WAY FOR THE SAN JACINTO - SAN VICENTE AQUEDUCT UNDERGROUND PIPE

MW1	
GW Elevation (ft)	665.70
PCE (ug/l)	310
TCE (ug/l)	6.9
DCE (ug/l)	ND

MW1



Notes:

1. Groundwater data are from January 9, 2004
2. Groundwater elevations are based on NGVD29 Datum

PIC Environmental SERVICES

LOVETT'S 1 HOUR CLEANERS
1378 East Grand Avenue
Escondido, California

SITE PLAN SHOWING GROUNDWATER DATA

Project No.:

ES7892

Date:

February 2004

Figure 3



E-4

PIC ENVIRONMENTAL SERVICES
742 GENEVIEVE STREET, SUITE G, SOLANA BEACH, CA 92075
858/259-3140 FAX: 858/259-3157

August 20, 2003

Mr. Jim Schuck
County of San Diego
Department of Environmental Health
P.O. Box 129261
San Diego, CA 92112-9261

RECEIVED
D. E. H.
HAIL ROOM
2003 SEP 5 AM 9 10

Dear Mr. Schuck:

RE: Groundwater Monitoring Well Installation and Monitoring Report
Lovett's 1 Hour Cleaners
1351 E. Grand Avenue, Escondido, California
DEH Reference #H11085-001

1.0 INTRODUCTION

PIC Environmental Services (PIC) respectfully submits the following information regarding groundwater monitoring data on behalf of La Caze Development Company for the above referenced property. An additional groundwater monitoring well (MW5) was installed, and groundwater monitoring well monitoring, sampling, and laboratory analysis services were performed on the four (4) existing monitoring wells. All work activities discussed below were performed in general accordance with San Diego County, Department of Environmental Health (DEH), Site Assessment and Mitigation (SAM) guidelines, PIC's April 17, 2003 Work Plan, and the DEH approval letter dated April 24, 2003.

2.0 SITE INFORMATION AND SUMMARY OF PREVIOUS WORK

2.1 Site Identification and Ownership

Specific property, owner/operator, and project information are summarized as follows:

OWNER/
RESPONSIBLE PARTY: La Caze Development Company
2601 Airport Drive, Suite 300
Torrance, CA 90505-6106
Contact: Mr. Norm La Caze

SITE REFERENCE: Lovett's 1 Hour Cleaners
1378 E. Grand Avenue
Escondido, CA 92027

DEH REFERENCE NO.: H11085-001

2.2 Site Location and Use

The subject site is located in the Escondido Village Shopping Center located between Grand Avenue and East Valley Parkway, east of Ash Street, in Escondido, California (Figure 1). The site is currently operated as a retail dry cleaning facility.

2.3 Previous Work

In August 1998, Vertex Engineering Services, Inc. (Vertex) conducted a Phase I Environmental Site Assessment for the site and surrounding shopping center. The site had reportedly operated as a dry cleaning facility since the early to mid-1970s, and the dry cleaning machine was reportedly replaced in 1994. In September 1998, Vertex drilled five soil borings (B-1 to B-5) to depth ranging from 7 to 20 feet below ground surface (bgs). Analytical results of soil samples recovered from the borings indicated that tetrachloroethene (PCE) concentrations ranged from below the laboratory detection limit to 55,000 ug/kg. The maximum PCE concentration was detected near the southeast corner of the dry cleaning facility at approximately fourteen feet bgs.

In February 1999, Vertex installed groundwater monitoring well MW-1 in soil boring B-1A. PCE was detected at 17,000 ug/kg in a soil sample recovered at 5 feet bgs, and PCE concentrations at 15 and 30 feet bgs were below the laboratory detection limits. The well was constructed of 2-inch diameter PVC casing, and the screen interval extended from 15 to 30 feet bgs. Groundwater was encountered in monitoring well MW-1 at approximately 11 feet bgs, and PCE and trichloroethylene (TCE) were detected at 160 ug/l and 4.6 ug/l, respectively.

In March 1999, Bryant, Palmer, Soto, Inc. (BPS) drilled 11 soil borings (B-6 to B-18) in the vicinity of the dry cleaning facility. Soil samples were collected at 2 and 5 feet bgs and soil vapor samples were collected at 1.5 and 4.5 feet bgs from borings B-6 to B-18. Soil samples were recovered at 5 and 10 feet bgs from borings B-17 and B-18, and these borings were subsequently converted to groundwater monitoring wells MW-2 and MW-3, respectively. The screen interval in wells MW-2 and MW-3 extends from 5 to 20 feet bgs. In addition, monitoring well MW-1 was reconstructed with the screen interval extending from approximately 5 to 20 feet bgs. Laboratory results of soil samples recovered from borings B-6 to B-18 indicated that PCE concentrations ranged from below the laboratory detection limit to 10,000 ug/kg. TCE and cis-1,2-Dichloroethene (DCE) were also detected in several soil samples at lesser concentrations. Soil vapor PCE concentrations ranged from below the laboratory detection limit to 160 ug/l. DCE and TCE were detected in several samples at lesser concentrations. Groundwater PCE concentrations ranged from 368 ug/l to 13,700 ug/l, TCE concentrations ranged from 19 ug/l to 600 ug/l, and DCE concentrations ranged from 10.2 ug/l and 3,930 ug/l. The maximum PCE, TCE, and DCE concentrations were detected in the groundwater sample recovered from monitoring well MW-2.

In June 1999, BPS installed groundwater monitoring well MW4 north of the dry cleaning facility. TCE, PCE, and DCE were not detected in a groundwater sample recovered from monitoring well MW-4 on June 22, 1999.

On December 22, 2000, PIC performed purging and sampling operations on monitoring wells MW-1 to MW-4. PCE concentrations in the groundwater samples recovered from monitoring wells MW-1 to MW-4 ranged from 71 ug/l to 14,000 ug/l, TCE concentrations ranged from below the laboratory detection limit (5.0 ug/l) to 690 ug/l, and DCE concentrations ranged from 11 ug/l to 3,700 ug/l.

In June, 2001 PIC recovered and tested a groundwater sample from MW4. The groundwater PCE concentration was 15 ug/l. No other VOCs were detected. MW4 was subsequently destroyed pursuant to the requirement imposed by the San Diego County Water Authority.

3.0 SCOPE OF WORK

Groundwater monitoring activities outlined in this report were performed by PIC personnel and vendors between April and August, 2003. The scope of services included:

- Obtaining a monitoring well permit from DEH, marking the drilling location, and notifying Underground Service Alert in order to verify the absence of subsurface utilities in the immediate vicinity of the proposed location.
- Installing monitoring well MW5 using hollow stem auger drilling equipment (2-inch diameter PVC casing in an 8-inch diameter 20-foot deep borehole).
- Surveying the top of casing elevation of the newly installed well, measuring groundwater depths using an electric probe, purging the wells using a submersible pump, and recovering groundwater samples for laboratory analyses.
- Analyzing the groundwater samples for volatile organic compounds (VOCs) by EPA Method 8260B.
- Preparing a report documenting procedures and findings of monitoring well installation and testing operations.

4.0 FIELD AND LABORATORY OPERATIONS

4.1 Groundwater Monitoring Well Installation Procedures

Groundwater monitoring well MW5 was installed using hollow stem auger drilling equipment on June 30, 2003 (Figures 2 and 3). Soil samples were recovered at approximately 6, 11, 16, and 20 feet bgs during drilling operations using a split spoon sampling device. The soil samples were placed in glass sample jars, capped with plastic lids, sealed, labeled, and immediately placed in an ice-chilled cooler. The sample recovered at approximately 11 feet bgs was delivered to a California certified analytical laboratory using standard chain-of-custody procedures where it was analyzed for VOCs by EPA Method 8260B.

The well was constructed with 2-inch diameter PVC casing inside an 8-inch diameter borehole. Flush threaded PVC screened casing with 0.020-inch slots was suspended from approximately five (5) feet bgs extending to 20 feet bgs, with solid PVC casing extending from five (5) feet bgs to near grade. Sand (#3) was added slowly to the annulus between the drill stems and the casing in the borehole. The sand filter pack extended from the bottom of the borehole to approximately 4 feet bgs, and a bentonite seal was placed above the sand filter pack from 3 to 4 feet bgs. A locking cap was installed, and the well was completed by cementing a water-tight well cover over the center of the well. Well construction specifications and subsurface lithologies are described on the Monitoring Well Log provided in Appendix A.

4.2 Groundwater Monitoring, Sampling, and Testing Operations

On July 16, 2003, PIC personnel performed water level monitoring, purging, and sampling operations on the four (4) groundwater monitoring wells. The water depth was measured using a Solinst electric water level probe and ranged from approximately 8.85 feet to 10.58 feet below the top of casing (Table 1). Casing elevations were determined by a California licensed surveyor on August 11, 2003. The monitoring wells were prepared for sampling by slowly purging approximately 1.5 borehole volumes of water from the wells using a submersible pump. Water temperature, conductivity, and pH were measured and recorded during purging operations (Table 2). The purging equipment was washed in a solution of trisodium phosphate and water prior to the each purging/sampling event.

The water samples were collected using disposable bailers and were placed in laboratory-supplied containers appropriate for the required analyses. These samples were immediately placed into an ice-filled cooler. The samples were transported and relinquished to a California certified analytical laboratory using standard chain-of-custody procedures where they were analyzed for chlorinated volatile organic compounds (VOCs) by EPA Method 8260B (Table 3).

5.0 GEOLOGY AND HYDROLOGY

The surface geology at the subject property is depicted on published geologic maps as Pleistocene aged non-marine sedimentary deposits. These sedimentary deposits are apparently underlain by Jurassic-Cretaceous aged tonalite and diorite (*Geologic Map of California, Santa Ana Sheet*, California Division of Mines and Geology, 1966). Soils encountered during previous site assessment operations consisted primarily of dense silty sand from the ground surface to approximately 10 feet bgs, clayey sand from 10 to 15 feet bgs, and gravelly sand from approximately 20 to 30 feet bgs (*Additional Subsurface Investigation Report*, BPS, April 13, 1999).

The site is located within the Escondido Hydrologic Subarea, within the Escondido Creek Hydrologic Area of the Carlsbad Hydrologic Unit. Beneficial uses of groundwater include municipal, agricultural, and industrial service supply (California Regional Water Quality Control Board, *Water Quality Control Plan for the San Diego Basin (9)*, 1994). The water table was encountered between approximately 8.85 feet to 10.58 feet below top of casing. The local groundwater gradient slopes northwesterly at a gradient of 0.008 foot/foot (Figure 3).

PIC conducted an investigation of potential hydrologic receptors in the vicinity of the subject property. This investigation included interviews with representatives of the County of San Diego, Department of Environmental Health, Land Use Division, a review of USGS topographic maps, a review of San Diego County Water Authority data regarding the nearby aqueduct, and field reconnaissance of the area within approximately 1,000 feet of the subject property. Mr. Larry Newcomb of the County of San Diego Department of Environmental Health, Land Use Division was consulted on February 2, 2001 regarding groundwater production wells in the site vicinity. Mr. Newcomb had no knowledge of any public or private groundwater production wells within approximately 1,000 feet of the subject property. On February 1, 2001 PIC representatives inspected all properties within approximately 1,000 feet of the subject property for evidence of groundwater production wells or other hydrogeologic receptors. No groundwater production wells were identified within approximately 1,000 feet of the subject property; however, several groundwater monitoring wells were identified approximately 1,100 feet northwest (downgradient) of the subject property. The San Jacinto - San Vicente aqueduct reportedly consists of two (2) 48-inch concrete pipelines which are located immediately east of the subject site. The centerline of these pipelines is reportedly approximately seven (7) feet bgs; therefore, the pipelines extend from approximately five (5) feet to nine (9) feet bgs. Escondido Creek is located approximately 1,300 feet northwest of the subject property. This section of Escondido Creek is concrete lined.

6.0 LABORATORY RESULTS

VOCs were not detected in soil sample MW5-11 at the respective laboratory detection limits (Appendix B). PCE concentrations in the groundwater samples recovered from monitoring wells MW-1 to MW-5 ranged from 18 ug/l to 13,000 ug/l, TCE concentrations ranged from below the laboratory detection limit (5.0 ug/l) to 1,100 ug/l, and DCE concentrations ranged from below the laboratory detection limit (5.0 ug/l) to 2,500 ug/l. Groundwater analytical results are summarized in Table 3 and are illustrated on Figure 3. Laboratory reports are provided in Appendix B.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The above referenced information and data prompt the following conclusions and recommendations:

1. In general, groundwater elevations have increased approximately 1 to 1.5 feet since the last monitoring event (December 2000). The local groundwater gradient slopes northwesterly at a gradient of 0.008 foot/foot.
2. The site is located within the Escondido Hydrologic Subarea, within the Escondido Creek Hydrologic Area of the Carlsbad Hydrologic Unit. Beneficial use designations of groundwater in the site vicinity include municipal, agricultural, and industrial service supply. However, no evidence of groundwater use within 1,000 feet of the subject property was encountered. The VOC-impacted groundwater does not appear to have impacted any water supply wells or surface water bodies. Furthermore, water is supplied to the site vicinity by the Escondido Water District, and there are no land uses in the site vicinity that would require the use of groundwater in the future.
3. PIC will consult DEH staff in order to evaluate if additional work is warranted with respect to groundwater assessment.

This report is intended for the exclusive use of the above named clients and governmental regulatory agencies only. PIC Environmental Services assumes no responsibility nor liability for the reliance herein or use hereof by anyone other than the above named clients and governmental agencies. Laboratory work cited in this report was prepared by Advanced Technology Laboratories and HP Labs who are responsible for the contents and conclusions of the laboratory data.

If you have any questions regarding this report, please contact Danny Oliver at (858) 259-3140.

Respectfully submitted,
PIC ENVIRONMENTAL SERVICES



Scott Green
Project Manager

Daniel C. Oliver
California Registered Geologist No. 1781
President



cc: Mr. Norm La Caze

ES7982.La.Caze.GW.1

TABLE 1 GROUNDWATER ELEVATIONS				
Well ID	Ref. Pt. Elev. (ft)	Date	Depth to Water (ft)	Groundwater Elevation (ft)
MW-1	675.49	3/1999	11.36	664.13
		12/2000	11.85	663.64
		7/2003	9.12	666.37
MW-2	674.46	3/1999	10.98	663.48
		12/2000	11.56	662.90
		7/2003	8.85	665.61
MW-3	674.59	3/1999	11.12	663.47
		12/2000	11.87	662.72
		7/2003	9.28	665.31
MW-4*	672.99	6/1999	-	-
		12/2000	11.03	661.96
		6/2001	9.08	663.91
MW-5	672.57	7/2003	10.58	661.99

*MW-4 was abandoned in 2001.

TABLE 2
GROUNDWATER SAMPLE DATA

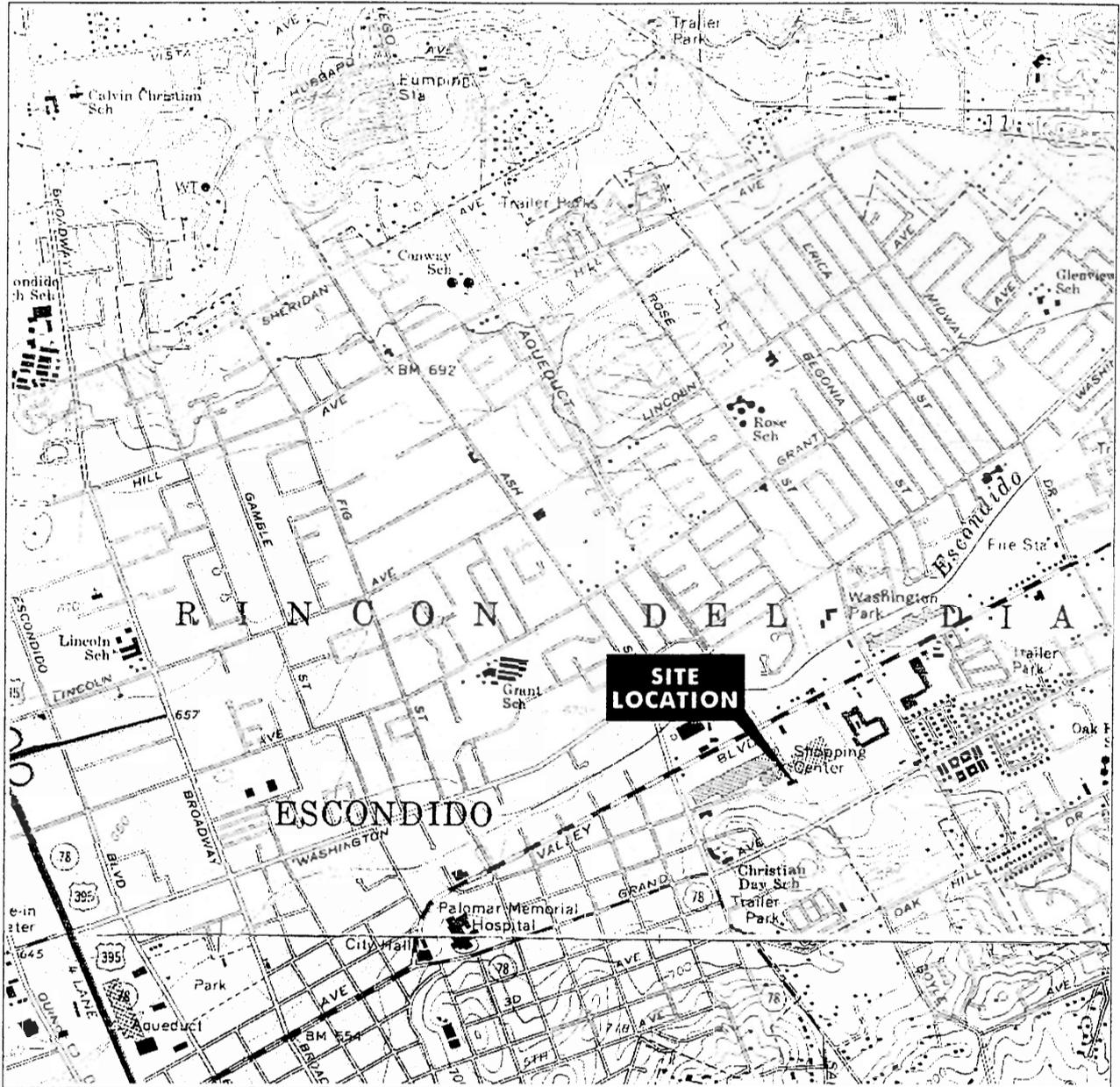
Well ID	Initial Depth to Water (feet)	Purged Volume (gal)	Temperature (°F)	pH (units)	Conductivity (µS/cm)
MW-1	9.12	5	78.5	6.60	1,830
		10	80.7	5.61	1,780
		15	79.3	5.57	1,850
MW-2	8.85	5	78.8	5.33	1,380
		10	77.1	5.39	1,350
		15	76.8	5.28	1,320
MW-3	9.28	5	78.0	5.46	1,450
		10	77.6	5.40	1,560
		15	77.3	5.38	1,530
MW-5	10.58	5	74.1	4.67	2,110
		10	75.9	5.70	1,630
		15	79.5	5.60	1,520

**TABLE 3
 GROUNDWATER ANALYTICAL RESULTS**

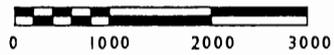
Well ID	Date	Groundwater Elevation (ft)	PCE (ug/l)	TCE (ug/l)	DCE (ug/l)
MW-1	2/2/99	-	160	4.6	-
	3/22/99	664.13	368	19	10.2
	12/22/00	663.64	130	ND	ND
	7/16/03	666.37	210	7.3	ND
MW-2	3/22/99	663.48	13,700	600	3,930
	12/22/00	662.90	14,000	1,100	3,700
	7/16/03	665.61	7,400	250	1,700
MW-3	3/22/99	663.47	2,500	150	400
	12/22/00	662.72	1,900	290	510
	7/16/03	665.31	13,000	690	2,500
MW-4	6/22/99*	-	ND	ND	ND
	12/22/00	661.96	71	ND	11
	6/15/01	663.91	15	ND	ND
MW-5	7/16/03	672.57	18	ND	5.9

Only analytes detected are tabulated
 * - Sample contained Chloroform (17.3 ug/l), Bromodichloromethane (17.3 ug/l), and Dibromochloromethane (12 ug/l)

FIGURES



Source: USGS 7.5' series (topographic)



Approximate Graphic Scale
1 Inch = 2000 feet



PIC Environmental - SERVICES -	LOVETT'S 1 HOUR CLEANERS 1378 East Grand Avenue Escondido, California	
SITE LOCATION MAP		
Project No.: E57982	Date: August 2003	Figure 1

EXPLANATION

-  GROUNDWATER MONITORING WELL
-  ABANDONED GROUNDWATER MONITORING WELL
-  INFERRED GROUNDWATER FLOW DIRECTION

AC
PARKING

MW5	
GW Elevation (ft)	661.99
PCE (ug/l)	18
TCE (ug/l)	ND
DCE (ug/l)	5.9

MW5

RETAIL SHOPS
1323-1345 E. VALLEY PKWY

663.0

664.0

MW4

CONCRETE RAMP

ESCONDIDO UNION SCHOOL DISTRICT OFFICES
1330 E. GRAND AVE

UNITED CEREBRAL PALSY
1390 E. GRAND AVE

665.0

FORMER FEDCO BUILDING
1475 E. VALLEY PKWY

MW3	
GW Elevation (ft)	665.31
PCE (ug/l)	13,000
TCE (ug/l)	690
DCE (ug/l)	2,500

MW3

MW2	
GW Elevation (ft)	665.61
PCE (ug/l)	7,400
TCE (ug/l)	250
DCE (ug/l)	1,700

MW2

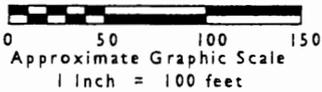
FORMER TUTOR TIME
1411 E. GRAND AVE

666.0

CENTERLINE OF 80 FOOT RIGHT OF WAY FOR THE SAN JACINTO - SAN VICENTE AQUEDUCT UNDERGROUND PIPE

MW1	
GW Elevation (ft)	666.37
PCE (ug/l)	210
TCE (ug/l)	7.3
DCE (ug/l)	ND

MW1



Notes:

1. Groundwater data are from July 16, 2003
2. Groundwater elevations are based on NGVD29 Datum

PIC Environmental SERVICES

LOVETT'S 1 HOUR CLEANERS
1378 East Grand Avenue
Escondido, California

SITE PLAN SHOWING GROUNDWATER DATA

Project No.: **ES7892**

Date: **August 2003**

Figure 3

APPENDIX A

Monitoring Well Log

Depth (feet)	Interval	Sample I.D.	OVA (ppm)	Geologic Description Color, grain size, moisture, density, odor, etc.	USCS Classification	Lithology/Completion Details
0						
5		MW5-6'	--	Clay; dark gray, moist, stiff, no odor	CL	BENTONITE CHIPS 2" PVC CASING CONCRETE
10		MW5-11'	--	Silty Clay/Clayey Silt; olive green, moist, moderately stiff, no odor	ML	WELL SCREEN (0.020") NO. 3 SAND
15		MW5-16'	--	Silty Clay/Clayey Silt; brown, saturated, moderately stiff, no odor		
20		MW5-20'	--	Silty Clay/Clayey Silt; brown, saturated, moderately stiff, no odor		
25						

Date Drilled: 6/30/03
 Logged By: D. Oliver
 Driller: West Hazmat
 Boring Type: Hollow Stem
 Boring Angle: 90°

Boring Diameter: 8-inch
 Casing Diameter: 2-inch
 Boring Depth: 20 feet
 Water Depth: -11 feet
 Well Screen Depth: 5-15 feet

PIC ENVIRONMENTAL SERVICES
 742 GENEVIEVE STREET · SUITE G
 SOLANA BEACH, CA 92075

LOVETT'S 1 HOUR CLEANERS
 1351 E Grand Avenue
 Escondido, California

BORING LOG

MW5

Project

ES7982

Date

August 2003

Sheet 1 of 1

APPENDIX B

Laboratory Reports

July 08, 2003

Danny Oliver
PIC Environmental Services
742 Genevieve St, Ste G
Solano Beach, CA 92075
TEL: (858) 663-7477
FAX: (858) 259-3157

RE: LA CAZE DEVELOPMENT CO., ES7982

Attention: Danny Oliver

ELAP No.: 1838

NELAP No.: 02107CA

Workorder No.: 063589

Enclosed are the results for sample(s) received on June 30, 2003 by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,



Eddie F. Rodriguez
Laboratory Director

This cover letter is an integral part of this analytical report.



Advanced Technology Laboratories

Date: 08-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW5-11'

Lab Order: 063589

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 6/30/2003 9:30:00 AM

Lab ID: 063589-001A

Matrix: SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS3_030706A	QC Batch: R03VS089	PrepDate:	Analyst: JPC		
1,1,1,2-Tetrachloroethane	ND	5.0	µg/Kg	1	7/6/2003
1,1,1-Trichloroethane	ND	5.0	µg/Kg	1	7/6/2003
1,1,2,2-Tetrachloroethane	ND	5.0	µg/Kg	1	7/6/2003
1,1,2-Trichloroethane	ND	5.0	µg/Kg	1	7/6/2003
1,1-Dichloroethane	ND	5.0	µg/Kg	1	7/6/2003
1,1-Dichloroethene	ND	5.0	µg/Kg	1	7/6/2003
1,1-Dichloropropene	ND	5.0	µg/Kg	1	7/6/2003
1,2,3-Trichlorobenzene	ND	5.0	µg/Kg	1	7/6/2003
1,2,3-Trichloropropane	ND	5.0	µg/Kg	1	7/6/2003
1,2,4-Trichlorobenzene	ND	5.0	µg/Kg	1	7/6/2003
1,2,4-Trimethylbenzene	ND	5.0	µg/Kg	1	7/6/2003
1,2-Dibromo-3-chloropropane	ND	10	µg/Kg	1	7/6/2003
1,2-Dibromoethane	ND	5.0	µg/Kg	1	7/6/2003
1,2-Dichlorobenzene	ND	5.0	µg/Kg	1	7/6/2003
1,2-Dichloroethane	ND	5.0	µg/Kg	1	7/6/2003
1,2-Dichloropropane	ND	5.0	µg/Kg	1	7/6/2003
1,3,5-Trimethylbenzene	ND	5.0	µg/Kg	1	7/6/2003
1,3-Dichlorobenzene	ND	5.0	µg/Kg	1	7/6/2003
1,3-Dichloropropane	ND	5.0	µg/Kg	1	7/6/2003
1,4-Dichlorobenzene	ND	5.0	µg/Kg	1	7/6/2003
2,2-Dichloropropane	ND	5.0	µg/Kg	1	7/6/2003
2-Chlorotoluene	ND	5.0	µg/Kg	1	7/6/2003
4-Chlorotoluene	ND	5.0	µg/Kg	1	7/6/2003
4-Isopropyltoluene	ND	5.0	µg/Kg	1	7/6/2003
Benzene	ND	5.0	µg/Kg	1	7/6/2003
Bromobenzene	ND	5.0	µg/Kg	1	7/6/2003
Bromodichloromethane	ND	5.0	µg/Kg	1	7/6/2003
Bromoform	ND	5.0	µg/Kg	1	7/6/2003
Bromomethane	ND	5.0	µg/Kg	1	7/6/2003
Carbon tetrachloride	ND	5.0	µg/Kg	1	7/6/2003
Chlorobenzene	ND	5.0	µg/Kg	1	7/6/2003
Chloroethane	ND	5.0	µg/Kg	1	7/6/2003
Chloroform	ND	5.0	µg/Kg	1	7/6/2003
Chloromethane	ND	5.0	µg/Kg	1	7/6/2003
cis-1,2-Dichloroethene	ND	5.0	µg/Kg	1	7/6/2003
cis-1,3-Dichloropropene	ND	5.0	µg/Kg	1	7/6/2003
Dibromochloromethane	ND	5.0	µg/Kg	1	7/6/2003

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 08-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW5-11'

Lab Order: 063589

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 6/30/2003 9:30:00 AM

Lab ID: 063589-001A

Matrix: SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
---------	--------	-----	------	-------	----	---------------

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS3_030706A	QC Batch:	R03VS089	PrepDate:	Analyst: JPC
Dibromomethane	ND	5.0	µg/Kg	1	7/6/2003
Dichlorodifluoromethane	ND	5.0	µg/Kg	1	7/6/2003
Ethylbenzene	ND	5.0	µg/Kg	1	7/6/2003
Hexachlorobutadiene	ND	5.0	µg/Kg	1	7/6/2003
Isopropylbenzene	ND	5.0	µg/Kg	1	7/6/2003
m,p-Xylene	ND	5.0	µg/Kg	1	7/6/2003
Methylene chloride	ND	5.0	µg/Kg	1	7/6/2003
n-Butylbenzene	ND	5.0	µg/Kg	1	7/6/2003
n-Propylbenzene	ND	5.0	µg/Kg	1	7/6/2003
Naphthalene	ND	5.0	µg/Kg	1	7/6/2003
o-Xylene	ND	5.0	µg/Kg	1	7/6/2003
sec-Butylbenzene	ND	5.0	µg/Kg	1	7/6/2003
Styrene	ND	5.0	µg/Kg	1	7/6/2003
tert-Butylbenzene	ND	5.0	µg/Kg	1	7/6/2003
Tetrachloroethene	ND	5.0	µg/Kg	1	7/6/2003
Toluene	ND	5.0	µg/Kg	1	7/6/2003
trans-1,2-Dichloroethene	ND	5.0	µg/Kg	1	7/6/2003
Trichloroethene	ND	5.0	µg/Kg	1	7/6/2003
Trichlorofluoromethane	ND	5.0	µg/Kg	1	7/6/2003
Vinyl chloride	ND	5.0	µg/Kg	1	7/6/2003

Qualifiers: ND - Not Detected at the Reporting Limit

S - Spike/Surrogate outside of limits due to matrix interferen

J - Analyte detected below quantitation limits

H - Sample exceeded analytical holding time

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

DO - Surrogate Diluted Out

Results are wet unless otherwise specified





CLIENT: PIC Environmental Services

Work Order: 063589

Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID: R030706MB1	SampType: MBLK	TestCode: 8260_S	Units: µg/Kg	Prep Date:	Run ID: MS3_030706A						
Client ID: ZZZZZ	Batch ID: R03VS089	TestNo: EPA 8260B		Analysis Date: 7/6/2003	SeqNo: 437441						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	10									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time

Calculations are based on raw values



CLIENT: PIC Environmental Services
Work Order: 063589
Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID: R030706MB1	SampType: MBLK	TestCode: 8260_S	Units: µg/Kg	Prep Date:	Run ID: MS3_030706A						
Client ID: ZZZZ	Batch ID: R03VS089	TestNo: EPA 8260B		Analysis Date: 7/6/2003	SeqNo: 437441						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Carbon tetrachloride	ND	5.0									
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
cis-1,3-Dichloropropene	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	5.0									
Methylene chloride	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									
Trichlorofluoromethane	ND	5.0									
Vinyl chloride	ND	5.0									
Surr: 1,2-Dichloroethane-d4	69.31	5.0	50	0	139	66	160	0	0	0	
Surr: 4-Bromofluorobenzene	50.68	5.0	50	0	101	84	120	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits DO- Surrogate dilute out
 J - Analyte detected below quantitation limits B - Analyte detected in the associated Method Blank H - Sample exceeded holding time
 R - RPD outside accepted recovery limits Calculations are based on raw values



CLIENT: PIC Environmental Services
Work Order: 063589
Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID: R030706MB1	SampType: MBLK	TestCode: 8260_S	Units: µg/Kg	Prep Date:	Run ID: MS3_030706A
Client ID: ZZZZ	Batch ID: R03VS089	TestNo: EPA 8260B		Analysis Date: 7/6/2003	SeqNo: 437441

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	58.26	5.0	50	0	117	69	131	0	0	0	
Surr: Toluene-d8	53.32	5.0	50	0	107	86	125	0	0	0	

Sample ID: R030706LC1	SampType: LCS	TestCode: 8260_S	Units: µg/Kg	Prep Date:	Run ID: MS3_030706A
Client ID: ZZZZ	Batch ID: R03VS089	TestNo: EPA 8260B		Analysis Date: 7/6/2003	SeqNo: 437440

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	102.5	5.0	100	0	103	67	155	0	0	0	
Benzene	102.2	5.0	100	0	102	86	140	0	0	0	
Chlorobenzene	98.15	5.0	100	0	98.2	86	138	0	0	0	
Toluene	100.7	5.0	100	0	101	85	144	0	0	0	
Trichloroethene	94	5.0	100	0	94	85	148	0	0	0	
Surr: 1,2-Dichloroethane-d4	66.92	5.0	50	0	134	66	160	0	0	0	
Surr: 4-Bromofluorobenzene	55.8	5.0	50	0	112	84	120	0	0	0	
Surr: Dibromofluoromethane	57	5.0	50	0	114	69	131	0	0	0	
Surr: Toluene-d8	55.03	5.0	50	0	110	86	125	0	0	0	

Sample ID: 063582-017AMS	SampType: MS	TestCode: 8260_S	Units: µg/Kg	Prep Date:	Run ID: MS3_030706A
Client ID: ZZZZ	Batch ID: R03VS089	TestNo: EPA 8260B		Analysis Date: 7/6/2003	SeqNo: 437445

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	56.93	5.0	100	0	56.9	50	145	0	0	0	
Benzene	73.16	5.0	100	0	73.2	45	150	0	0	0	
Chlorobenzene	54.21	5.0	100	0	54.2	36	148	0	0	0	
Toluene	63.2	5.0	100	0	63.2	34	167	0	0	0	
Trichloroethene	59.7	5.0	100	0	59.7	40	158	0	0	0	
Surr: 1,2-Dichloroethane-d4	83.57	5.0	50	0	167	66	160	0	0	0	S
Surr: 4-Bromofluorobenzene	58.21	5.0	50	0	116	84	120	0	0	0	
Surr: Dibromofluoromethane	63.74	5.0	50	0	127	69	131	0	0	0	
Surr: Toluene-d8	57.36	5.0	50	0	115	86	125	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO- Surrogate dilute out
 H - Sample exceeded holding time



CLIENT: PIC Environmental Services

Work Order: 063589

Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S

Sample ID: 063582-017AMSD	SampType: MSD	TestCode: 8260_S	Units: µg/Kg	Prep Date:	Run ID: MS3_030706A
Client ID: ZZZZZ	Batch ID: R03VS089	TestNo: EPA 8260B		Analysis Date: 7/6/2003	SeqNo: 437446

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	66.74	5.0	100	0	66.7	50	145	56.93	15.9	26	
Benzene	86.48	5.0	100	0	86.5	45	150	73.16	16.7	18	
Chlorobenzene	66.72	5.0	100	0	66.7	36	148	54.21	20.7	22	
Toluene	76.05	5.0	100	0	76	34	167	63.2	18.5	21	
Trichloroethene	71.39	5.0	100	0	71.4	40	158	59.7	17.8	20	
Surr: 1,2-Dichloroethane-d4	82.87	5.0	50	0	166	66	160	0	0	0	S
Surr: 4-Bromofluorobenzene	57.25	5.0	50	0	114	84	120	0	0	0	
Surr: Dibromofluoromethane	63.26	5.0	50	0	127	69	131	0	0	0	
Surr: Toluene-d8	57	5.0	50	0	114	86	125	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits DO - Surrogate dilute out
 J - Analyte detected below quantitation limits B - Analyte detected in the associated Method Blank H - Sample exceeded holding time
 R - RPD outside accepted recovery limits Calculations are based on raw values

July 23, 2003

Scott Green
PIC Environmental Services
742 Genevieve St, Ste G
Solano Beach, CA 92075
TEL: (858) 259-3140
FAX: (858) 259-3157

RE: LA CAZE DEVELOPMENT CO., ES7982

Attention: Scott Green

ELAP No.: 1838

NELAP No.: 02107CA

Workorder No.: 063872

Enclosed are the results for sample(s) received on July 18, 2003 by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,



Eddie F. Rodriguez
Laboratory Director

This cover letter is an integral part of this analytical report.



Advanced Technology Laboratories

Date: 23-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW1

Lab Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 7/16/2003 10:30:00 AM

Lab ID: 063872-001A

Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_030721A	QC Batch:	A03VW176	PrepDate:	Analyst: GG
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	7/21/2003
1,1,1-Trichloroethane	ND	5.0	µg/L	1	7/21/2003
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	7/21/2003
1,1,2-Trichloroethane	ND	5.0	µg/L	1	7/21/2003
1,1-Dichloroethane	ND	5.0	µg/L	1	7/21/2003
1,1-Dichloroethene	ND	5.0	µg/L	1	7/21/2003
1,1-Dichloropropene	ND	5.0	µg/L	1	7/21/2003
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	7/21/2003
1,2,3-Trichloropropane	ND	5.0	µg/L	1	7/21/2003
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	7/21/2003
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	7/21/2003
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	7/21/2003
1,2-Dibromoethane	ND	5.0	µg/L	1	7/21/2003
1,2-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003
1,2-Dichloroethane	ND	5.0	µg/L	1	7/21/2003
1,2-Dichloropropane	ND	5.0	µg/L	1	7/21/2003
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	7/21/2003
1,3-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003
1,3-Dichloropropane	ND	5.0	µg/L	1	7/21/2003
1,4-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003
2,2-Dichloropropane	ND	5.0	µg/L	1	7/21/2003
2-Chlorotoluene	ND	5.0	µg/L	1	7/21/2003
4-Chlorotoluene	ND	5.0	µg/L	1	7/21/2003
4-Isopropyltoluene	ND	5.0	µg/L	1	7/21/2003
Benzene	ND	5.0	µg/L	1	7/21/2003
Bromobenzene	ND	5.0	µg/L	1	7/21/2003
Bromodichloromethane	ND	5.0	µg/L	1	7/21/2003
Bromoform	ND	5.0	µg/L	1	7/21/2003
Bromomethane	ND	5.0	µg/L	1	7/21/2003
Carbon tetrachloride	ND	5.0	µg/L	1	7/21/2003
Chlorobenzene	ND	5.0	µg/L	1	7/21/2003
Chloroethane	ND	5.0	µg/L	1	7/21/2003
Chloroform	ND	5.0	µg/L	1	7/21/2003
Chloromethane	ND	5.0	µg/L	1	7/21/2003
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	7/21/2003
Dibromochloromethane	ND	5.0	µg/L	1	7/21/2003
Dibromomethane	ND	5.0	µg/L	1	7/21/2003

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 23-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW1

Lab Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 7/16/2003 10:30:00 AM

Lab ID: 063872-001A

Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS11_030721A	QC Batch: A03VW176	PrepDate:	Analyst: GG		
Dichlorodifluoromethane	ND	5.0	µg/L	1	7/21/2003
Ethylbenzene	ND	5.0	µg/L	1	7/21/2003
Hexachlorobutadiene	ND	5.0	µg/L	1	7/21/2003
Isopropylbenzene	ND	5.0	µg/L	1	7/21/2003
m,p-Xylene	ND	5.0	µg/L	1	7/21/2003
Methylene chloride	ND	5.0	µg/L	1	7/21/2003
n-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
n-Propylbenzene	ND	5.0	µg/L	1	7/21/2003
Naphthalene	ND	5.0	µg/L	1	7/21/2003
o-Xylene	ND	5.0	µg/L	1	7/21/2003
sec-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
Styrene	ND	5.0	µg/L	1	7/21/2003
tert-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
Tetrachloroethene	210	5.0	µg/L	1	7/21/2003
Toluene	ND	5.0	µg/L	1	7/21/2003
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	7/21/2003
Trichloroethene	7.3	5.0	µg/L	1	7/21/2003
Trichlorofluoromethane	ND	5.0	µg/L	1	7/21/2003
Vinyl chloride	ND	5.0	µg/L	1	7/21/2003

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 23-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW2

Lab Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 7/16/2003 10:40:00 AM

Lab ID: 063872-002A

Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_030721A	QC Batch:	A03VW176	PrepDate:	Analyst: GG
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	7/21/2003
1,1,1-Trichloroethane	ND	5.0	µg/L	1	7/21/2003
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	7/21/2003
1,1,2-Trichloroethane	ND	5.0	µg/L	1	7/21/2003
1,1-Dichloroethane	ND	5.0	µg/L	1	7/21/2003
1,1-Dichloroethene	ND	5.0	µg/L	1	7/21/2003
1,1-Dichloropropene	ND	5.0	µg/L	1	7/21/2003
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	7/21/2003
1,2,3-Trichloropropane	ND	5.0	µg/L	1	7/21/2003
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	7/21/2003
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	7/21/2003
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	7/21/2003
1,2-Dibromoethane	ND	5.0	µg/L	1	7/21/2003
1,2-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003
1,2-Dichloroethane	ND	5.0	µg/L	1	7/21/2003
1,2-Dichloropropane	ND	5.0	µg/L	1	7/21/2003
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	7/21/2003
1,3-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003
1,3-Dichloropropane	ND	5.0	µg/L	1	7/21/2003
1,4-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003
2,2-Dichloropropane	ND	5.0	µg/L	1	7/21/2003
2-Chlorotoluene	ND	5.0	µg/L	1	7/21/2003
4-Chlorotoluene	ND	5.0	µg/L	1	7/21/2003
4-Isopropyltoluene	ND	5.0	µg/L	1	7/21/2003
Benzene	ND	5.0	µg/L	1	7/21/2003
Bromobenzene	ND	5.0	µg/L	1	7/21/2003
Bromodichloromethane	ND	5.0	µg/L	1	7/21/2003
Bromoform	ND	5.0	µg/L	1	7/21/2003
Bromomethane	ND	5.0	µg/L	1	7/21/2003
Carbon tetrachloride	ND	5.0	µg/L	1	7/21/2003
Chlorobenzene	ND	5.0	µg/L	1	7/21/2003
Chloroethane	ND	5.0	µg/L	1	7/21/2003
Chloroform	ND	5.0	µg/L	1	7/21/2003
Chloromethane	ND	5.0	µg/L	1	7/21/2003
cis-1,2-Dichloroethene	1700	250	µg/L	50	7/21/2003
Dibromochloromethane	ND	5.0	µg/L	1	7/21/2003
Dibromomethane	ND	5.0	µg/L	1	7/21/2003

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 23-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW2

Lab Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 7/16/2003 10:40:00 AM

Lab ID: 063872-002A

Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS11_030721A	QC Batch: A03VW176	PrepDate:	Analyst: GG		
Dichlorodifluoromethane	ND	5.0	µg/L	1	7/21/2003
Ethylbenzene	ND	5.0	µg/L	1	7/21/2003
Hexachlorobutadiene	ND	5.0	µg/L	1	7/21/2003
Isopropylbenzene	ND	5.0	µg/L	1	7/21/2003
m,p-Xylene	ND	5.0	µg/L	1	7/21/2003
Methylene chloride	ND	5.0	µg/L	1	7/21/2003
n-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
n-Propylbenzene	ND	5.0	µg/L	1	7/21/2003
Naphthalene	ND	5.0	µg/L	1	7/21/2003
o-Xylene	ND	5.0	µg/L	1	7/21/2003
sec-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
Styrene	ND	5.0	µg/L	1	7/21/2003
tert-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
Tetrachloroethene	7400	250	µg/L	50	7/21/2003
Toluene	ND	5.0	µg/L	1	7/21/2003
trans-1,2-Dichloroethene	33	5.0	µg/L	1	7/21/2003
Trichloroethene	250	5.0	µg/L	1	7/21/2003
Trichlorofluoromethane	ND	5.0	µg/L	1	7/21/2003
Vinyl chloride	ND	5.0	µg/L	1	7/21/2003

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 23-Jul-03

CLIENT: PIC Environmental Services **Client Sample ID:** MW3
Lab Order: 063872
Project: LA CAZE DEVELOPMENT CO., ES7982 **Collection Date:** 7/16/2003 10:35:00 AM
Lab ID: 063872-003A **Matrix:** GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_030721A	QC Batch:	A03VW176	PrepDate:	Analyst:	GG
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	7/21/2003	
1,1,1-Trichloroethane	ND	5.0	µg/L	1	7/21/2003	
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	7/21/2003	
1,1,2-Trichloroethane	ND	5.0	µg/L	1	7/21/2003	
1,1-Dichloroethane	ND	5.0	µg/L	1	7/21/2003	
1,1-Dichloroethene	ND	5.0	µg/L	1	7/21/2003	
1,1-Dichloropropene	ND	5.0	µg/L	1	7/21/2003	
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	7/21/2003	
1,2,3-Trichloropropane	ND	5.0	µg/L	1	7/21/2003	
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	7/21/2003	
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	7/21/2003	
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	7/21/2003	
1,2-Dibromoethane	ND	5.0	µg/L	1	7/21/2003	
1,2-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003	
1,2-Dichloroethane	ND	5.0	µg/L	1	7/21/2003	
1,2-Dichloropropane	ND	5.0	µg/L	1	7/21/2003	
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	7/21/2003	
1,3-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003	
1,3-Dichloropropane	ND	5.0	µg/L	1	7/21/2003	
1,4-Dichlorobenzene	ND	5.0	µg/L	1	7/21/2003	
2,2-Dichloropropane	ND	5.0	µg/L	1	7/21/2003	
2-Chlorotoluene	ND	5.0	µg/L	1	7/21/2003	
4-Chlorotoluene	ND	5.0	µg/L	1	7/21/2003	
4-Isopropyltoluene	ND	5.0	µg/L	1	7/21/2003	
Benzene	ND	5.0	µg/L	1	7/21/2003	
Bromobenzene	ND	5.0	µg/L	1	7/21/2003	
Bromodichloromethane	ND	5.0	µg/L	1	7/21/2003	
Bromoform	ND	5.0	µg/L	1	7/21/2003	
Bromomethane	ND	5.0	µg/L	1	7/21/2003	
Carbon tetrachloride	ND	5.0	µg/L	1	7/21/2003	
Chlorobenzene	ND	5.0	µg/L	1	7/21/2003	
Chloroethane	ND	5.0	µg/L	1	7/21/2003	
Chloroform	ND	5.0	µg/L	1	7/21/2003	
Chloromethane	ND	5.0	µg/L	1	7/21/2003	
cis-1,2-Dichloroethene	2500	250	µg/L	50	7/22/2003	
Dibromochloromethane	ND	5.0	µg/L	1	7/21/2003	
Dibromomethane	ND	5.0	µg/L	1	7/21/2003	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 23-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW3

Lab Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 7/16/2003 10:35:00 AM

Lab ID: 063872-003A

Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_030721A	QC Batch:	A03VW176	PrepDate:	Analyst: GG
Dichlorodifluoromethane	ND	5.0	µg/L	1	7/21/2003
Ethylbenzene	ND	5.0	µg/L	1	7/21/2003
Hexachlorobutadiene	ND	5.0	µg/L	1	7/21/2003
Isopropylbenzene	ND	5.0	µg/L	1	7/21/2003
m,p-Xylene	ND	5.0	µg/L	1	7/21/2003
Methylene chloride	ND	5.0	µg/L	1	7/21/2003
n-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
n-Propylbenzene	ND	5.0	µg/L	1	7/21/2003
Naphthalene	ND	5.0	µg/L	1	7/21/2003
o-Xylene	ND	5.0	µg/L	1	7/21/2003
sec-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
Styrene	ND	5.0	µg/L	1	7/21/2003
tert-Butylbenzene	ND	5.0	µg/L	1	7/21/2003
Tetrachloroethene	13000	250	µg/L	50	7/22/2003
Toluene	ND	5.0	µg/L	1	7/21/2003
trans-1,2-Dichloroethene	52	5.0	µg/L	1	7/21/2003
Trichloroethene	690	250	µg/L	50	7/22/2003
Trichlorofluoromethane	ND	5.0	µg/L	1	7/21/2003
Vinyl chloride	ND	5.0	µg/L	1	7/21/2003

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 23-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW5

Lab Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 7/16/2003 10:45:00 AM

Lab ID: 063872-004A

Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS11_030723A	QC Batch:	A03VW177	PrepDate:	Analyst:	GG
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	7/22/2003	
1,1,1-Trichloroethane	ND	5.0	µg/L	1	7/22/2003	
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	7/22/2003	
1,1,2-Trichloroethane	ND	5.0	µg/L	1	7/22/2003	
1,1-Dichloroethane	ND	5.0	µg/L	1	7/22/2003	
1,1-Dichloroethene	ND	5.0	µg/L	1	7/22/2003	
1,1-Dichloropropene	ND	5.0	µg/L	1	7/22/2003	
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	7/22/2003	
1,2,3-Trichloropropane	ND	5.0	µg/L	1	7/22/2003	
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	7/22/2003	
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	7/22/2003	
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	7/22/2003	
1,2-Dibromoethane	ND	5.0	µg/L	1	7/22/2003	
1,2-Dichlorobenzene	ND	5.0	µg/L	1	7/22/2003	
1,2-Dichloroethane	ND	5.0	µg/L	1	7/22/2003	
1,2-Dichloropropane	ND	5.0	µg/L	1	7/22/2003	
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	7/22/2003	
1,3-Dichlorobenzene	ND	5.0	µg/L	1	7/22/2003	
1,3-Dichloropropane	ND	5.0	µg/L	1	7/22/2003	
1,4-Dichlorobenzene	ND	5.0	µg/L	1	7/22/2003	
2,2-Dichloropropane	ND	5.0	µg/L	1	7/22/2003	
2-Chlorotoluene	ND	5.0	µg/L	1	7/22/2003	
4-Chlorotoluene	ND	5.0	µg/L	1	7/22/2003	
4-Isopropyltoluene	ND	5.0	µg/L	1	7/22/2003	
Benzene	ND	5.0	µg/L	1	7/22/2003	
Bromobenzene	ND	5.0	µg/L	1	7/22/2003	
Bromodichloromethane	ND	5.0	µg/L	1	7/22/2003	
Bromoform	ND	5.0	µg/L	1	7/22/2003	
Bromomethane	ND	5.0	µg/L	1	7/22/2003	
Carbon tetrachloride	ND	5.0	µg/L	1	7/22/2003	
Chlorobenzene	ND	5.0	µg/L	1	7/22/2003	
Chloroethane	ND	5.0	µg/L	1	7/22/2003	
Chloroform	ND	5.0	µg/L	1	7/22/2003	
Chloromethane	ND	5.0	µg/L	1	7/22/2003	
cis-1,2-Dichloroethene	5.9	5.0	µg/L	1	7/22/2003	
Dibromochloromethane	ND	5.0	µg/L	1	7/22/2003	
Dibromomethane	ND	5.0	µg/L	1	7/22/2003	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 23-Jul-03

CLIENT: PIC Environmental Services

Client Sample ID: MW5

Lab Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

Collection Date: 7/16/2003 10:45:00 AM

Lab ID: 063872-004A

Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS11_030723A	QC Batch: A03VW177	PrepDate:	Analyst: GG		
Dichlorodifluoromethane	ND	5.0	µg/L	1	7/22/2003
Ethylbenzene	ND	5.0	µg/L	1	7/22/2003
Hexachlorobutadiene	ND	5.0	µg/L	1	7/22/2003
Isopropylbenzene	ND	5.0	µg/L	1	7/22/2003
m,p-Xylene	ND	5.0	µg/L	1	7/22/2003
Methylene chloride	ND	5.0	µg/L	1	7/22/2003
n-Butylbenzene	ND	5.0	µg/L	1	7/22/2003
n-Propylbenzene	ND	5.0	µg/L	1	7/22/2003
Naphthalene	ND	5.0	µg/L	1	7/22/2003
o-Xylene	ND	5.0	µg/L	1	7/22/2003
sec-Butylbenzene	ND	5.0	µg/L	1	7/22/2003
Styrene	ND	5.0	µg/L	1	7/22/2003
tert-Butylbenzene	ND	5.0	µg/L	1	7/22/2003
Tetrachloroethene	18	5.0	µg/L	1	7/22/2003
Toluene	ND	5.0	µg/L	1	7/22/2003
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	7/22/2003
Trichloroethene	ND	5.0	µg/L	1	7/22/2003
Trichlorofluoromethane	ND	5.0	µg/L	1	7/22/2003
Vinyl chloride	ND	5.0	µg/L	1	7/22/2003

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified





CLIENT: PIC Environmental Services
 Work Order: 063872
 Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID: A030721MB2	SampType: MBLK	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030721A						
Client ID: ZZZZ	Batch ID: A03VW176	TestNo: EPA 8260B		Analysis Date: 7/21/2003	SeqNo: 443471						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	5.0									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits

S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 Calculations are based on raw values

DO - Surrogate dilute out
 H - Sample exceeded holding time



CLIENT: PIC Environmental Services

Work Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID: A030721MB2	SampType: MBLK	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030721A						
Client ID: ZZZZZ	Batch ID: A03VW176	TestNo: EPA 8260B		Analysis Date: 7/21/2003	SeqNo: 443471						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Carbon tetrachloride	ND	5.0									
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	5.0									
Methylene chloride	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									
Trichlorofluoromethane	ND	5.0									
Vinyl chloride	ND	5.0									
Surr: 1,2-Dichloroethane-d4	20.51	0	25	0	82	74	123	0	0	0	
Surr: 4-Bromofluorobenzene	24.05	0	25	0	96.2	90	112	0	0	0	
Surr: Dibromofluoromethane	22.34	0	25	0	89.4	84	123	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits DO - Surrogate dilute out
 J - Analyte detected below quantitation limits B - Analyte detected in the associated Method Blank H - Sample exceeded holding time
 R - RPD outside accepted recovery limits Calculations are based on raw values



CLIENT: PIC Environmental Services
Work Order: 063872
Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID: A030721MB2	SampType: MBLK	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030721A						
Client ID: ZZZZZ	Batch ID: A03VW176	TestNo: EPA 8260B		Analysis Date: 7/21/2003	SeqNo: 443471						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Toluene-d8	23.92	0	25	0	95.7	90	119	0		0	

Sample ID: A030722MB2	SampType: MBLK	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030723A						
Client ID: ZZZZZ	Batch ID: A03VW177	TestNo: EPA 8260B		Analysis Date: 7/22/2003	SeqNo: 443810						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	5.0									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time
 Calculations are based on raw values



CLIENT: PIC Environmental Services

Work Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID: A030722MB2	SampType: MBLK	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030723A						
Client ID: ZZZZZ	Batch ID: A03VW177	TestNo: EPA 8260B		Analysis Date: 7/22/2003	SeqNo: 443810						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									
Carbon tetrachloride	ND	5.0									
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	5.0									
Methylene chloride	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 Calculations are based on raw values
 DO - Surrogate dilute out
 H - Sample exceeded holding time



CLIENT: PIC Environmental Services
Work Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID: A030722MB2	SampType: MBLK	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030723A
Client ID: ZZZZ	Batch ID: A03VW177	TestNo: EPA 8260B		Analysis Date: 7/22/2003	SeqNo: 443810

Analyte	Result	PQL	SPK value	SPK Ref Val	Units: µg/L	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	ND	5.0										
Vinyl chloride	ND	5.0										
Surr: 1,2-Dichloroethane-d4	20.49	0	25	0		82	74	123	0	0	0	0
Surr: 4-Bromofluorobenzene	23.59	0	25	0		94.4	90	112	0	0	0	0
Surr: Dibromofluoromethane	22.2	0	25	0		88.8	84	123	0	0	0	0
Surr: Toluene-d8	24.11	0	25	0		96.4	90	119	0	0	0	0

Sample ID: A030721LC1	SampType: LCS	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030721A
Client ID: ZZZZ	Batch ID: A03VW176	TestNo: EPA 8260B		Analysis Date: 7/21/2003	SeqNo: 443468

Analyte	Result	PQL	SPK value	SPK Ref Val	Units: µg/L	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21.48	5.0	20	0		107	67	130	0	0	0	0
Benzene	21.79	5.0	20	0		109	74	132	0	0	0	0
Chlorobenzene	21.5	5.0	20	0		108	71	122	0	0	0	0
Toluene	20.95	5.0	20	0		105	74	131	0	0	0	0
Trichloroethene	22.56	5.0	20	0		113	73	130	0	0	0	0
Surr: 1,2-Dichloroethane-d4	20.18	0	25	0		80.7	74	123	0	0	0	0
Surr: 4-Bromofluorobenzene	24.27	0	25	0		97.1	90	112	0	0	0	0
Surr: Dibromofluoromethane	23.32	0	25	0		93.3	84	123	0	0	0	0
Surr: Toluene-d8	24.54	0	25	0		98.2	90	119	0	0	0	0

Sample ID: A030722LC1	SampType: LCS	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030723A
Client ID: ZZZZ	Batch ID: A03VW177	TestNo: EPA 8260B		Analysis Date: 7/22/2003	SeqNo: 443807

Analyte	Result	PQL	SPK value	SPK Ref Val	Units: µg/L	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21.5	5.0	20	0		108	67	130	0	0	0	0
Benzene	21.64	5.0	20	0		108	74	132	0	0	0	0
Chlorobenzene	20.67	5.0	20	0		103	71	122	0	0	0	0
Toluene	20.83	5.0	20	0		104	74	131	0	0	0	0
Trichloroethene	22.56	5.0	20	0		113	73	130	0	0	0	0

Qualifiers: ND - Not Detected at the Reporting Limit DO- Surrogate dilute out
 J - Analyte detected below quantitation limits B - Analyte detected in the associated Method Blank H - Sample exceeded holding time
 R - RPD outside accepted recovery limits Calculations are based on raw values



CLIENT: PIC Environmental Services
Work Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID: A030722LC1	SampType: LCS	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030723A
Client ID: ZZZZ	Batch ID: A03VW177	TestNo: EPA 8260B		Analysis Date: 7/22/2003	SeqNo: 443807

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	20.79	0	25	0	83.2	74	123	0	0		
Surr: 4-Bromofluorobenzene	24.57	0	25	0	98.3	90	112	0	0		
Surr: Dibromofluoromethane	23.79	0	25	0	95.2	84	123	0	0		
Surr: Toluene-d8	24.64	0	25	0	98.6	90	119	0	0		

Sample ID: A030721MB2MS	SampType: MS	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030721A
Client ID: ZZZZ	Batch ID: A03VW176	TestNo: EPA 8260B		Analysis Date: 7/21/2003	SeqNo: 443469

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21.93	5.0	20	0	110	73	122	0	0		
Benzene	21.79	5.0	20	0	109	81	124	0	0		
Chlorobenzene	21.28	5.0	20	0	106	75	120	0	0		
Toluene	21.09	5.0	20	0	105	81	123	0	0		
Trichloroethene	22.61	5.0	20	0	113	80	122	0	0		
Surr: 1,2-Dichloroethane-d4	20.66	0	25	0	82.6	74	123	0	0		
Surr: 4-Bromofluorobenzene	24.26	0	25	0	97	90	112	0	0		
Surr: Dibromofluoromethane	23.61	0	25	0	94.4	84	123	0	0		
Surr: Toluene-d8	24.53	0	25	0	98.1	90	119	0	0		

Sample ID: A030722MB2MS	SampType: MS	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030723A
Client ID: ZZZZ	Batch ID: A03VW177	TestNo: EPA 8260B		Analysis Date: 7/22/2003	SeqNo: 443808

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21.56	5.0	20	0	108	73	122	0	0		
Benzene	21.37	5.0	20	0	107	81	124	0	0		
Chlorobenzene	20.81	5.0	20	0	104	75	120	0	0		
Toluene	20.71	5.0	20	0	104	81	123	0	0		
Trichloroethene	22.28	5.0	20	0	111	80	122	0	0		
Surr: 1,2-Dichloroethane-d4	21.15	0	25	0	84.6	74	123	0	0		
Surr: 4-Bromofluorobenzene	24.37	0	25	0	97.5	90	112	0	0		

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits DO - Surrogate dilute out
 J - Analyte detected below quantitation limits B - Analyte detected in the associated Method Blank H - Sample exceeded holding time
 R - RPD outside accepted recovery limits Calculations are based on raw values



CLIENT: PIC Environmental Services
Work Order: 063872

Project: LA CAZE DEVELOPMENT CO., ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WU

Sample ID: A030722MB2MS	SampType: MS	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030723A						
Client ID: ZZZZ	Batch ID: A03VW177	TestNo: EPA 8260B		Analysis Date: 7/22/2003	SeqNo: 443808						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Dibromofluoromethane	24.19	0	25	0	96.8	84	123	0	0	0	0
Surr: Toluene-d8	24.59	0	25	0	98.4	90	119	0	0	0	0

Sample ID: A030721MB2MSD	SampType: MSD	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030721A						
Client ID: ZZZZ	Batch ID: A03VW176	TestNo: EPA 8260B		Analysis Date: 7/21/2003	SeqNo: 443470						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21.9	5.0	20	0	110	73	122	21.93	0.137	21	21
Benzene	21.82	5.0	20	0	109	81	124	21.79	0.138	19	19
Chlorobenzene	21.64	5.0	20	0	108	75	120	21.28	1.68	18	18
Toluene	21.23	5.0	20	0	106	81	123	21.09	0.662	20	20
Trichloroethene	22.56	5.0	20	0	113	80	122	22.61	0.221	20	20
Surr: 1,2-Dichloroethane-d4	20.71	0	25	0	82.8	74	123	0	0	0	0
Surr: 4-Bromofluorobenzene	24.41	0	25	0	97.6	90	112	0	0	0	0
Surr: Dibromofluoromethane	23.76	0	25	0	95	84	123	0	0	0	0
Surr: Toluene-d8	24.41	0	25	0	97.6	90	119	0	0	0	0

Sample ID: A030722MB2MSD	SampType: MSD	TestCode: 8260_WU	Units: µg/L	Prep Date:	Run ID: MS11_030723A						
Client ID: ZZZZ	Batch ID: A03VW177	TestNo: EPA 8260B		Analysis Date: 7/22/2003	SeqNo: 443809						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	21.98	5.0	20	0	110	73	122	21.56	1.93	21	21
Benzene	21.69	5.0	20	0	108	81	124	21.37	1.49	19	19
Chlorobenzene	21.12	5.0	20	0	106	75	120	20.81	1.48	18	18
Toluene	20.97	5.0	20	0	105	81	123	20.71	1.25	20	20
Trichloroethene	22.62	5.0	20	0	113	80	122	22.28	1.51	20	20
Surr: 1,2-Dichloroethane-d4	20.42	0	25	0	81.7	74	123	0	0	0	0
Surr: 4-Bromofluorobenzene	24.3	0	25	0	97.2	90	112	0	0	0	0
Surr: Dibromofluoromethane	24.04	0	25	0	96.2	84	123	0	0	0	0
Surr: Toluene-d8	24.43	0	25	0	97.7	90	119	0	0	0	0

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time
 Calculations are based on raw values

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
 3275 Walnut Avenue
 Signal Hill, CA 90807
 (562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

Method of Transport: Client ATL CA OverN FEDEX Other: _____

Sample Condition Upon Receipt: 1. CHILLED 518°C N 4. SEALED N Y N
 2. HEADSPACE (VOA) N 5. # OF SPLS MATCH COC Y N
 3. CONTAINER INTACT Y N 6. PRESERVED Y N

Logged By: SA Date: 7/18/03 Time: 7:10 PM

P.O.#: _____

Client: PC ENVIRONMENTAL SERVICES
 Address: 742 GENEVIEVE ST, SUITE G
 City: SOLANA BEACH State: CA Zip Code: 92075
 TEL: (858) 259-3140 FAX: (858) 259-3157

Project Name: LA CAZE DEVELOPMENT CO. Project #: EST982
 Sampler: SCOTT GREEN (Printed Name)
 Received by: (Signature and Printed Name) [Signature] Date: 7-18-03 Time: 4:45 PM
 Relinquished by: (Signature and Printed Name) [Signature] Date: 7-18-03 Time: 7:00 PM
 Relinquished by: (Signature and Printed Name) [Signature] Date: 7-18-03 Time: 7:10 PM

I hereby authorize ATL to perform the work indicated below:
 Project Mgr /Submitter: SCOTT GREEN Date: 7/16/03
 Signature: [Signature]

Send Report To: SAME
 Attn: _____
 Co: _____
 Address: _____
 City: _____ State: _____ Zip: _____

Special Instructions/Comments: _____

Sample/Records - Archival & Disposal
 Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.
Storage Fees (applies when storage is requested):
 • Sample : \$2.00 / sample / mo (after 45 days)
 • Records : \$1.00 / ATL workorder / mo (after 1 year)

ITEM	LAB USE ONLY:		Sample Description	Date	Time	Circle or Add Analysis(es) Requested	SPECIFY APPROPRIATE MATRIX				PRESERVATION		REMARKS			
	Batch #:	Lab No.:					Container(s) #	Type	TAT	Remarks	RTNE	CT				
1	063892-001A	MW1		7/16	10:30	8081A (Pesticides) 8082 (PCB) 8208 (Nitrates) 8270C (BMA) 80108 (Total Metals) 80158 (GRO) / BTEX 80158 (DRO)	SOIL	WATER	GROUND WATER	WASTEWATER	X	E	4	V	G	
2		MW2			10:40						X					
3		MW3			10:35						X					
4		MW5			10:45						X					

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday
 C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Plastic M=Metal
 J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=HCl N=HNO₃ S=H₂SO₄ C=4°C
 Z=Zn(AC)₂ O=NaOH T=Na₂S₂O₈



JCS
PERMIT #W101280
A.P.N. #230-230-30
EST #H11085-001

COUNTY OF SAN DIEGO
DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION

MONITORING WELL CONSTRUCTION PERMIT

SITE NAME: LA CAZE DEVELOPMENT COMPANY

SITE ADDRESS: 1349 E. VALLEY PY, ESCONDIDO, CA 92027

PERMIT TO: **INSTALL ONE GROUND WATER MONITORING WELL**

PERMIT APPROVAL DATE: MAY 3, 2003

PERMIT EXPIRES ON: OCTOBER 1, 2003

PERMIT CONDITIONS:

1. Wells must have a **minimum 3-foot concrete surface seal**. The surface seal shall consist of concrete able to withstand the maximum anticipated load without cracking or deteriorating. The concrete should meet Class A specifications of a minimum 4000-pound compressive strength.
2. All water and soil resulting from the activities covered by this permit must be managed, stored and disposed of as specified in the SAM Manual in Section 5, E- 4. (http://www.sdcounty.ca.gov/deh/lwq/sam/manual_guidelines.html). In addition, drill cuttings must be properly handled and disposed in compliance with the Stormwater Best Management Practices of the local jurisdiction.
3. Within 60 days of completing work, submit a well construction report, including all well and/or boring logs and laboratory data to the Well Permit Desk. This report must include all items required by the SAM Manual, Section 5, Pages 6 & 7.
4. This office must be given 48-hour notice of any drilling activity on this site and advanced notification of drilling cancellation. Please contact the Well Permit Desk at 338-2339.

NOTE: This permit does not constitute approval of a work plan as defined in Section 2722 of Article 11 of C.C.R., Title 23. Work plans are required for all unauthorized release investigations in San Diego County.

APPROVED BY: Carol Spangenberg
CAROL SPANGENBERG

DATE: 06/03/2003

NOTIFIED: 6/3/03 MSC



PERMIT A CATION
GROUNDWATER
AND
VADOSE MONITORING WELLS
AND EXPLORATORY OR TEST BORINGS

OFFICE USE ONLY
PERMIT #W 101280
SAM CASE #N #H 11085
DATE RECEIVED: 5.5.03
FEE PAID: 8160-2288

RECEIVED

MAY 5 AM 10 34

VAP

A. RESPONSIBLE PARTY LA CAZEC DEVELOPMENT COMPANY Phone 310/534-0411
Mailing Address 2601 AIRPORT DRIVE, SUITE 300 City TORRANCE State CA Zip 90505
Contact Person MR. NORM LA CAZEC Phone 310/534-0411 ext. _____

B. SITE ASSESSMENT PROJECT IF APPLICABLE #H 11085-001

C. CONSULTING FIRM PIC ENVIRONMENTAL SERVICES
Mailing Address 742 GENEVIEVE STREET, SUITE G City SOLANA BEACH State CA Zip 92075
Registered Professional DANNY OLIVER Registration # 4781 (RG/RCE, CEG)
Contact Person DANNY OLIVER Phone 858/259-3140 ext. _____

D. DRILLING COMPANY WEST HAZMAT DRILLING CS# 554979 Phone 619-686-5800
Mailing Address 3620 KURTZ STREET City SAN DIEGO State CA Zip 92110

E. CONSTRUCTION INFORMATION

TYPE OF WELLS/ BORINGS TO BE CONSTRUCTED	MATERIALS TO BE USED	PROPOSED CONSTRUCTION
<input checked="" type="checkbox"/> Groundwater <u>1</u> <input type="checkbox"/> Vadose _____ <input type="checkbox"/> Boring _____ <input type="checkbox"/> Other _____ NUMBER OF WELLS TO BE DESTROYED # _____	CASING Type <u>PVC</u> Gauge <u>SEA 40</u> Diameter <u>2"</u> Well Screen Size <u>0.0W"</u> Filter Pack # <u>SAND</u> (Specify) Drilling Method <input checked="" type="checkbox"/> Auger <input type="checkbox"/> Air Rotor <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Percussion <input type="checkbox"/> Other	Estimated ground water depth <u>10</u> ft: CEMENT SEAL <u>0</u> to <u>3'</u> BENTONITE SEAL <u>3'</u> to <u>4'</u> FILTER PACK <u>4'</u> to <u>20'</u> PERFORATION <u>5'</u> to <u>20'</u> PROPOSED DRILLING DATE <u>5/26/03</u> - NOTE: For wells with multiple completion attach a well construction diagram

I agree to comply with the requirements of the current Site Assessment and Mitigation Manual, and with all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction.

DRILLER'S SIGNATURE [Signature] DATE 4-30-03

Within 60 days of completion, I will furnish the Monitoring Well Permit Desk with a complete and accurate well/boring log. I will certify the design and construction/or destruction of the well/borings in accordance with the permit application.

RG/RCE/CEG SIGNATURE [Signature] DATE 4/30/03

F. SITE INFORMATION

1. ASSESSOR'S PARCEL NUMBER <u>230-230-30</u>	
Site Name <u>LA CAZE DEVELOPMENT COMPANY</u>	
Site Address <u>1349 E. VALLEY PARKWAY</u>	City <u>ESCONDIDO</u> Zip <u>92027</u>
PROPERTY OWNER <u>LA CAZE DEVELOPMENT COMPANY</u> Phone <u>710/534-0411</u>	
Mailing Address <u>2601 AIRPORT BLVD, SUITE 300</u> City <u>TORRANCE</u> State <u>CA</u> Zip <u>90505-6106</u>	
NUMBER OF WELLS <u>ONE (1)</u>	TYPE OF WELLS <u>GW MONITORING</u>
2. ASSESSOR'S PARCEL NUMBER _____	
Site Name _____	
Site Address _____	City _____ Zip _____
PROPERTY OWNER _____ Phone _____	
Mailing Address _____ City _____ State _____ Zip _____	
NUMBER OF WELLS _____	TYPE OF WELLS _____
3. ASSESSOR'S PARCEL NUMBER _____	
Site Name _____	
Site Address _____	City _____ Zip _____
PROPERTY OWNER _____ Phone _____	
Mailing Address _____ City _____ State _____ Zip _____	
NUMBER OF WELLS _____	TYPE OF WELLS _____
4. ASSESSOR'S PARCEL NUMBER _____	
Site Name _____	
Site Address _____	City _____ Zip _____
PROPERTY OWNER _____ Phone _____	
Mailing Address _____ City _____ State _____ Zip _____	
NUMBER OF WELLS _____	TYPE OF WELLS _____

IMPORTANT NOTICE
 Page 2
 January 14, 2003

Fees Shown In The Application Format
 Permit Fees In Effect for January 10, 2003 - June 30, 2003

ACTIVITY	FEE SCHEDULE	AMOUNT
Permit for Well Installations Only (Groundwater Monitoring Wells Vadose, Vapor Extraction Wells)	\$160.00 for the first well \$135.00 for each additional well	$\underline{1} \times \$160.00$ \$ <u>160.00</u> $\underline{\quad} \times \135.00 \$ <u>\quad</u>
Permit for Borings Only (CPT's, Hydropunch, Geoproses, Temp. Well Points, etc.)	\$160.00 for the first boring \$ 40.00 for each additional boring	$\underline{1} \times \$160.00$ \$ <u>\quad</u> $\underline{\quad} \times \$ 40.00$ \$ <u>\quad</u>
Permit for Well Destructions Only	\$160.00 for the first destruction \$105.00 for each additional destruction	$\underline{1} \times \$160.00$ \$ <u>\quad</u> $\underline{\quad} \times \105.00 \$ <u>\quad</u>
Permit for any Combination of Well Installations, Borings, & Destructions (except UST backfill permit)	The first activity will be \$160.00. Additional activities will be as follows: \$135.00 for each additional well \$ 40.00 for each additional boring \$105.00 for each well destruction	$\underline{1} \times \$160.00$ \$ <u>\quad</u> $\underline{\quad} \times \135.00 \$ <u>\quad</u> $\underline{\quad} \times \$ 40.00$ \$ <u>\quad</u> $\underline{\quad} \times \105.00 \$ <u>\quad</u>
Permit for Underground Storage Tank Monitoring System in Backfill (i.e. enhanced leak detection)	\$300.00 (Flat Fee)	\$300.00
	TOTAL COST OF PERMIT	\$ <u>160.00</u>

PERMIT APPLICATION FOR
GROUND WATER AND VADOSE MONITORING WELLS
EXPLORATORY OR TEST BORINGS

- For well destruction, complete only #1 below.
- Well design, logging and construction must be supervised by a Geologist, Engineering Geologist or Civil Engineer who is registered or certified by the State of California.
- Well driller must have an active C-57 License and current \$2,500 bond with the County.
- Provide a plot plan giving location of property lines, existing improvements such as structures, underground tanks, underground utilities, underground piping, and the proposed monitoring and/or observation wells.
- If applicable, provide a signed copy of the Property Owner Responsibility form for each property listed in Section "F".
- If applicable, provide a signed copy of the Property Owner Responsibility form for each property listed in Section "F". Provide encroachment/excavation permit and/or traffic control permit for work to be done in street or public right of way.

1. If wells are to be destroyed, provide a description of method of destruction. _____

2. What is the proposed purpose of the well/boring? To collect soil and grab groundwater samples
for environmental site assessment testing.

3. What procedures will be used to prevent the well/boring from providing an avenue to contamination during construction?
All borings will be filled with bentonite from total depth to 1' below ground surface
and capped to ground surface with concrete.

4. What field procedures will be utilized to determine if contamination exists?
Portable analyzing equipment will be used to evaluate potential volatile organic
compounds.

5. What procedures will be used to determine whether samples will be sent for laboratory testing or archiving?
Samples will be evaluated based on screening with portable analyzing equipment and
field observations.

6. What constituents will be monitored and tested (Include EPA Laboratory Test Methods to be used)?
VOCs by EPA Method 8260B.
7. How will samples be transported and preserved? Samples will be stored in an ice-chilled cooler and delivered to a State-certified laboratory using standard chain-of-custody procedures.
8. What sampling methods will be used? Samples will be recovered using split-spoon sampling equipment.
9. Are you proposing a variation from the methods and/or procedures presented in the requirements for the construction of Vadose and Ground Water Monitoring Wells (Current SAM Manual Requirements). If yes, specify these variations.
No.
10. What procedures will be used to ensure no contamination will be introduced by the drilling equipment?
Down-hole drilling and sampling equipment will be steam-washed.
11. What methods will be used to clean sampling equipment? Sampling equipment will be washed in a solution of trisodium phosphate and water and rinsed with tap water.
12. What cleaning method will be used to clean casing and screen prior to installation? If necessary, screen will be steam-washed.



PIC ENVIRONMENTAL SERVICES
742 GENEVIEVE STREET, SUITE G, SOLANA BEACH, CA 92075
858/259-3140 FAX: 858/259-3157

February 26, 2004

RECEIVED
2004 MAR 1 PM 1 39
D.E.H.
HALLROOM

Mr. Jim Schuck
County of San Diego
Department of Environmental Health
P.O. Box 129261
San Diego, CA 92112-9261

Dear Mr. Schuck:

RE: Groundwater Monitoring Report
Lovett's 1 Hour Cleaners
1351 E. Grand Avenue, Escondido, California
DEH Reference #H11085-001

1.0 INTRODUCTION

PIC Environmental Services (PIC) respectfully submits the following information regarding groundwater monitoring data on behalf of La Caze Development Company for the above referenced property. The work activities discussed below were performed in general accordance with San Diego County, Department of Environmental Health (DEH), Site Assessment and Mitigation (SAM) guidelines.

2.0 SITE INFORMATION AND SUMMARY OF PREVIOUS WORK

2.1 Site Identification and Ownership

Specific property, owner/operator, and project information are summarized as follows:

OWNER REPRESENTATIVE/
RESPONSIBLE PARTY: La Caze Development Company
2601 Airport Drive, Suite 300
Torrance, CA 90505-6106
Contact: Mr. Norm La Caze

SITE REFERENCE: Lovett's 1 Hour Cleaners
1378 E. Grand Avenue
Escondido, CA 92027

DEH REFERENCE NO.: H11085-001

2.2 Site Location and Use

The subject site is located in the Escondido Village Shopping Center located between Grand Avenue and East Valley Parkway, east of Ash Street, in Escondido, California (Figures 1 and 2). The site is currently operated as a retail dry cleaning facility.

2.3 Previous Work

In August 1998, Vertex Engineering Services, Inc. (Vertex) conducted a Phase I Environmental Site Assessment for the site and surrounding shopping center. The site had reportedly operated as a dry cleaning facility since the early to mid-1970s, and the dry cleaning machine was reportedly replaced in 1994. In September 1998, Vertex drilled five soil borings (B-1 to B-5) to depth ranging from 7 to 20 feet below ground surface (bgs). Analytical results of soil samples recovered from the borings indicated that tetrachloroethene (PCE) concentrations ranged from below the laboratory detection limit to 55,000 ug/kg. The maximum PCE concentration was detected near the southeast corner of the dry cleaning facility at approximately fourteen feet bgs.

In February 1999, Vertex installed groundwater monitoring well MW-1 in soil boring B-1A. PCE was detected at 17,000 ug/kg in a soil sample recovered at 5 feet bgs, and PCE concentrations at 15 and 30 feet bgs were below the laboratory detection limits. The well was constructed of 2-inch diameter PVC casing, and the screen interval extended from 15 to 30 feet bgs. Groundwater was encountered in monitoring well MW-1 at approximately 11 feet bgs, and PCE and trichloroethylene (TCE) were detected at 160 ug/l and 4.6 ug/l, respectively.

In March 1999, Bryant, Palmer, Soto, Inc. (BPS) drilled 11 soil borings (B-6 to B-18) in the vicinity of the dry cleaning facility. Soil samples were collected at 2 and 5 feet bgs and soil vapor samples were collected at 1.5 and 4.5 feet bgs from borings B-6 to B-18. Soil samples were recovered at 5 and 10 feet bgs from borings B-17 and B-18, and these borings were subsequently converted to groundwater monitoring wells MW-2 and MW-3, respectively. The screen interval in wells MW-2 and MW-3 extends from 5 to 20 feet bgs. In addition, monitoring well MW-1 was reconstructed with the screen interval extending from approximately 5 to 20 feet bgs. Laboratory results of soil samples recovered from borings B-6 to B-18 indicated that PCE concentrations ranged from below the laboratory detection limit to 10,000 ug/kg. TCE and cis-1,2-Dichloroethene (DCE) were also detected in several soil samples at lesser concentrations. Soil vapor PCE concentrations ranged from below the laboratory detection limit to 160 ug/l. DCE and TCE were detected in several samples at lesser concentrations. Groundwater PCE concentrations ranged from 368 ug/l to 13,700 ug/l, TCE concentrations ranged from 19 ug/l to 600 ug/l, and DCE concentrations ranged from 10.2 ug/l and 3,930 ug/l. The maximum PCE, TCE, and DCE concentrations were detected in the groundwater sample recovered from monitoring well MW-2.

In June 1999, BPS installed groundwater monitoring well MW4 north of the dry cleaning facility. TCE, PCE, and DCE were not detected in a groundwater sample recovered from monitoring well MW-4 on June 22, 1999.

On December 22, 2000, PIC performed purging and sampling operations on monitoring wells MW-1 to MW-4. PCE concentrations in the groundwater samples recovered from monitoring wells MW-1 to MW-4 ranged from 71 ug/l to 14,000 ug/l, TCE concentrations ranged from below the laboratory detection limit (5.0 ug/l) to 690 ug/l, and DCE concentrations ranged from 11 ug/l to 3,700 ug/l.

In June, 2001 PIC recovered and tested a groundwater sample from MW4. The groundwater PCE concentration was 15 ug/l. No other VOCs were detected. MW4 was subsequently destroyed pursuant to the requirement imposed by the San Diego County Water Authority.

Groundwater monitoring well MW5 was installed on June 30, 2003 and four (4) monitoring wells were monitored and sampled on July 16, 2003. PCE concentrations in the groundwater samples recovered from the four (4) monitoring wells MW-1, MW-2, MW-3, and MW-5 ranged from 18 ug/l to 13,000 ug/l, TCE concentrations ranged from below the laboratory detection limit (5.0 ug/l) to 1,100 ug/l, and DCE concentrations ranged from below the laboratory detection limit (5.0 ug/l) to 2,500 ug/l.

3.0 SCOPE OF WORK

Groundwater monitoring activities outlined in this report were performed by PIC personnel and vendors in January, 2004. The scope of services included:

- Measuring groundwater depths using an electric probe, purging the wells using a submersible pump, and recovering groundwater samples for laboratory analyses.
- Analyzing the groundwater samples for volatile organic compounds (VOCs) by EPA Method 8260B.
- Preparing a report documenting procedures and findings of monitoring and testing operations.

4.0 FIELD AND LABORATORY OPERATIONS

On January 9, 2004 PIC personnel performed water level monitoring, purging, and sampling operations on the four (4) groundwater monitoring wells. The water depth was measured using a Solinst electric water level probe and ranged from approximately 9.50 feet to 11.32 feet below the top of casing (Table 1). The monitoring wells were prepared for sampling by slowly purging approximately 1.5 borehole volumes of water from the wells using a submersible pump. Water levels, temperature, conductivity, and pH were measured and recorded during purging and sampling operations (Appendix A). The purging equipment was washed in a solution of trisodium phosphate and water prior to the each purging/sampling event.

The water samples were collected using disposable bailers and were placed in laboratory-supplied containers appropriate for the required analyses. These samples were immediately placed into an ice-filled cooler. The samples were transported and relinquished to a California certified analytical laboratory using standard chain-of-custody procedures where they were analyzed for chlorinated volatile organic compounds (VOCs) by EPA Method 8260B (Table 2).

5.0 GEOLOGY AND HYDROLOGY

The surface geology at the subject property is depicted on published geologic maps as Pleistocene aged non-marine sedimentary deposits. These sedimentary deposits are apparently underlain by Jurassic-Cretaceous aged tonalite and diorite (*Geologic Map of California, Santa Ana Sheet*, California Division of Mines and Geology, 1966). Soils encountered during previous site assessment operations consisted primarily of dense silty sand from the ground surface to approximately 10 feet bgs, clayey sand from 10 to 15 feet bgs, and gravelly sand from approximately 20 to 30 feet bgs (*Additional Subsurface Investigation Report*, BPS, April 13, 1999).

The site is located within the Escondido Hydrologic Subarea, within the Escondido Creek Hydrologic Area of the Carlsbad Hydrologic Unit. Beneficial uses of groundwater include municipal, agricultural, and industrial service supply (California Regional Water Quality Control Board, *Water Quality Control Plan for the San Diego Basin (9)*, 1994). The water table was encountered between approximately 9.50 feet to 11.32 feet below top of casing. The local groundwater gradient slopes northwesterly at a gradient of approximately 0.008 foot/foot (Figure 3).

PIC conducted an investigation of potential hydrologic receptors in the vicinity of the subject property. This investigation included interviews with representatives of the County of San Diego, Department of Environmental Health, Land Use Division, a review of USGS topographic maps, a review of San Diego County Water Authority data regarding the nearby aqueduct, and field reconnaissance of the area within approximately 1,000 feet of the subject property. Mr. Larry Newcomb of the County of San

Diego Department of Environmental Health, Land Use Division was consulted on February 2, 2001 regarding groundwater production wells in the site vicinity. Mr. Newcomb had no knowledge of any public or private groundwater production wells within approximately 1,000 feet of the subject property. On February 1, 2001 PIC representatives inspected all properties within approximately 1,000 feet of the subject property for evidence of groundwater production wells or other hydrogeologic receptors. No groundwater production wells were identified within approximately 1,000 feet of the subject property; however, several groundwater monitoring wells were identified approximately 1,100 feet northwest (down-gradient) of the subject property. The San Jacinto - San Vicente aqueduct reportedly consists of two (2) 48-inch concrete pipelines which are located immediately east of the subject site. The centerline of these pipelines is reportedly approximately seven (7) feet bgs; therefore, the pipelines extend from approximately five (5) feet to nine (9) feet bgs. Escondido Creek is located approximately 1,300 feet northwest of the subject property. This section of Escondido Creek is concrete lined.

6.0 LABORATORY RESULTS

PCE concentrations in the groundwater samples recovered from monitoring wells MW-1 to MW-5 ranged from 11 ug/l to 8,700 ug/l, TCE concentrations ranged from below the laboratory detection limit (5.0 ug/l) to 400 ug/l, and DCE concentrations ranged from below the laboratory detection limit (5.0 ug/l) to 1,800 ug/l. Groundwater analytical results are summarized in Table 2 and are illustrated on Figure 3. Laboratory reports are provided in Appendix B.

7.0 DISCUSSION

The building that is currently occupied by Lovett's 1 Hour Cleaners is slated for demolition and the building footprint will be paved over with asphalt concrete for a parking lot to service a Wal-Mart department store that will be constructed several hundred feet to the south. La Caze Development Company and PIC request that the Site Assessment and Mitigation case file for this site be closed with no further action required. This recommendation is supported by the following:

- VOC-impacted soil and groundwater at the site do not pose a risk to human health or other biologic receptors as demonstrated by results of the vapor-phase migration and risk evaluation performed by PIC and presented in a Site Assessment Summary Report (PIC, April 24, 2001). The calculated health risk for the use of the subject site as an industrial (dry cleaning) facility was 6.42×10^{-7} . This level of risk was concluded to be insignificant. Furthermore, it appears that the health risk posed by VOC-impacted soil and groundwater for the proposed future site use as a asphalt-paved parking lot will be considerably lower.

- The VOC-impacted groundwater plume appears stable on the basis of historical groundwater monitoring data. There does not appear to be a risk of adverse impacts to any sensitive groundwater resources (i.e., groundwater production wells) or surface water receptors.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The above referenced information and data prompt the following conclusions and recommendations:

1. In general, groundwater elevations have decreased by less than one (1) foot since the last monitoring event (July 2003). The local groundwater gradient slopes northwesterly at a gradient of 0.008 foot/foot.
2. The site is located within the Escondido Hydrologic Subarea, within the Escondido Creek Hydrologic Area of the Carlsbad Hydrologic Unit. Beneficial use designations of groundwater in the site vicinity include municipal, agricultural, and industrial service supply. However, no evidence of groundwater use within 1,000 feet of the subject property was encountered. The VOC-impacted groundwater does not appear to have impacted any water supply wells or surface water bodies. Furthermore, water is supplied to the site vicinity by the Escondido Water District, and there are no land uses in the site vicinity that would require the use of groundwater in the future.
3. La Caze Development Company and PIC recommend that the Site Assessment and Mitigation case file for this site be closed with no further action required. The site is slated for re-development of an asphalt-paved parking lot that will service a proposed Wal-Mart department store. The monitoring wells will be abandoned/destroyed in accordance with County and State regulations. Grading operations in the vicinity of the demolished dry cleaner should be monitored and managed properly in order to minimize VOC-impacted dust and vapor emissions.

This report is intended for the exclusive use of the above named clients and governmental regulatory agencies only. PIC Environmental Services assumes no responsibility nor liability for the reliance herein or use hereof by anyone other than the above named clients and governmental agencies. Laboratory work cited in this report was prepared by Advanced Technology Laboratories and HP Labs who are responsible for the contents and conclusions of the laboratory data.

If you have any questions regarding this report, please contact Danny Oliver at (858) 259-3140.

Respectfully submitted,
PIC ENVIRONMENTAL SERVICES



Scott Green
Project Manager



Daniel C. Oliver
California Registered Geologist No. 4781
President



cc: Mr. Norm La Caze

ES7982.La.Caze.GW.2

TABLE 1
GROUNDWATER ELEVATIONS

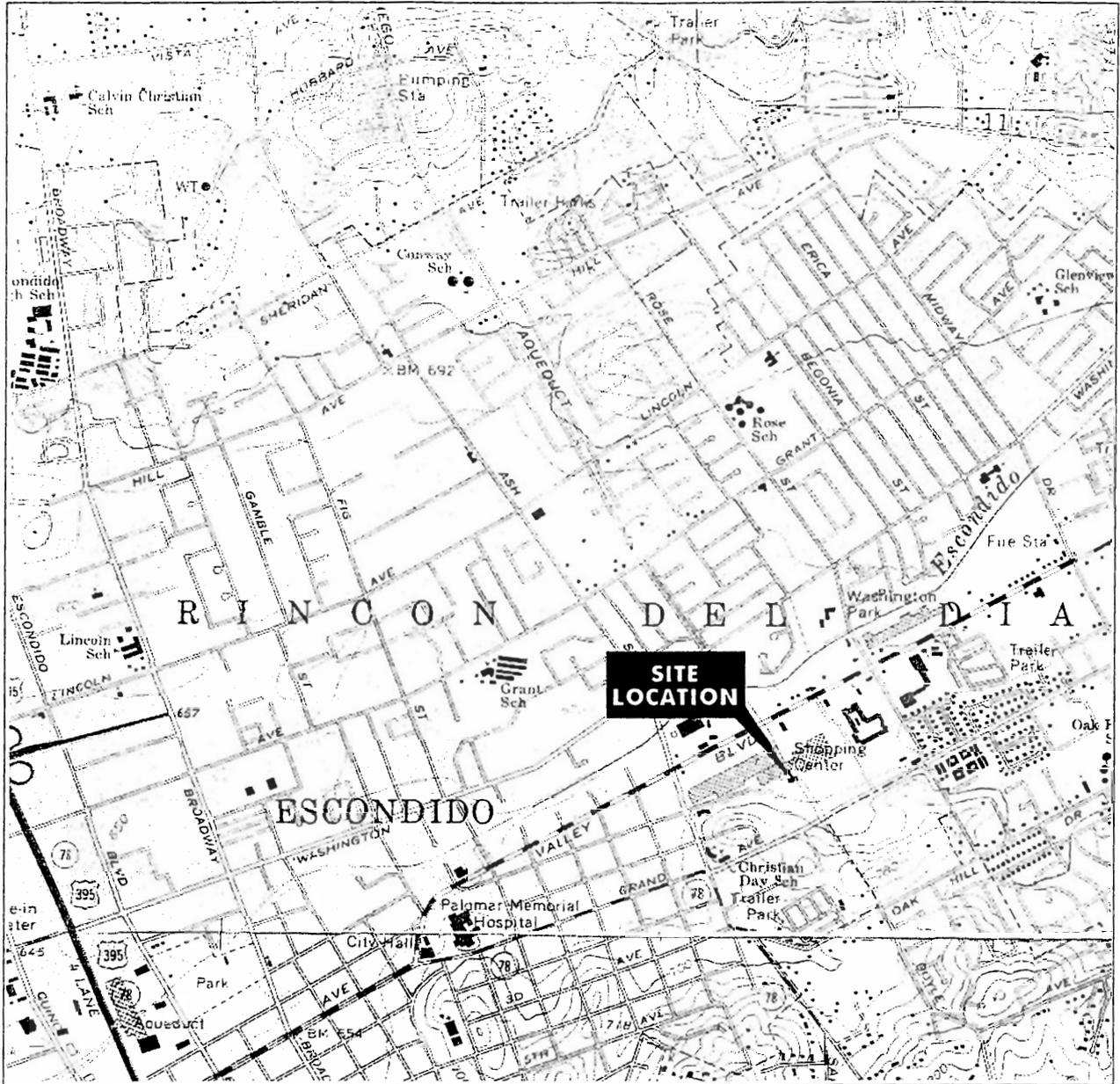
Well ID	Ref. Pt. Elev. (ft)	Date	Depth to Water (ft)	Groundwater Elevation (ft)
MW-1	675.49	3/1999	11.36	664.13
		12/2000	11.85	663.64
		7/2003	9.12	666.37
		1/2004	9.79	665.70
MW-2	674.46	3/1999	10.98	663.48
		12/2000	11.56	662.90
		7/2003	8.85	665.61
		1/2004	9.50	664.96
MW-3	674.59	3/1999	11.12	663.47
		12/2000	11.87	662.72
		7/2003	9.28	665.31
		1/2004	9.92	664.67
MW-4*	672.99	6/1999	-	-
		12/2000	11.03	661.96
		6/2001	9.08	663.91
MW-5	672.57	7/2003	10.58	661.99
		1/2004	11.32	661.25

*MW-4 was abandoned in 2001.

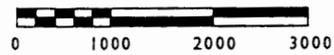
TABLE 2
GROUNDWATER ANALYTICAL RESULTS

Well ID	Date	Groundwater Elevation (ft)	PCE (ug/l)	TCE (ug/l)	DCE (ug/l)
MW-1	2/2/99	-	160	4.6	-
	3/22/99	664.13	368	19	10.2
	12/22/00	663.64	130	ND	ND
	7/16/03	666.37	210	7.3	ND
	1/9/04	665.70	310	6.9	ND
MW-2	3/22/99	663.48	13,700	600	3,930
	12/22/00	662.90	14,000	1,100	3,700
	7/16/03	665.61	7,400	250	1,700
	1/9/04	664.96	6,200	240	1,400
MW-3	3/22/99	663.47	2,500	150	400
	12/22/00	662.72	1,900	290	510
	7/16/03	665.31	13,000	690	2,500
	1/9/04	664.67	8,700	400	1,800
MW-4	6/22/99*	-	ND	ND	ND
	12/22/00	661.96	71	ND	11
	6/15/01	663.91	15	ND	ND
MW-5	7/16/03	672.57	18	ND	5.9
	1/9/04	661.25	11	ND	ND

Sample MW-1 also contained Chloroform (5.1 ug/l)
 Sample MW-2 also contained Chloroform (5.4 ug/l) and trans-1,2-Dichloroethene (44 ug/l)
 Sample MW-3 also contained trans-1,2-Dichloroethene (56 ug/l)



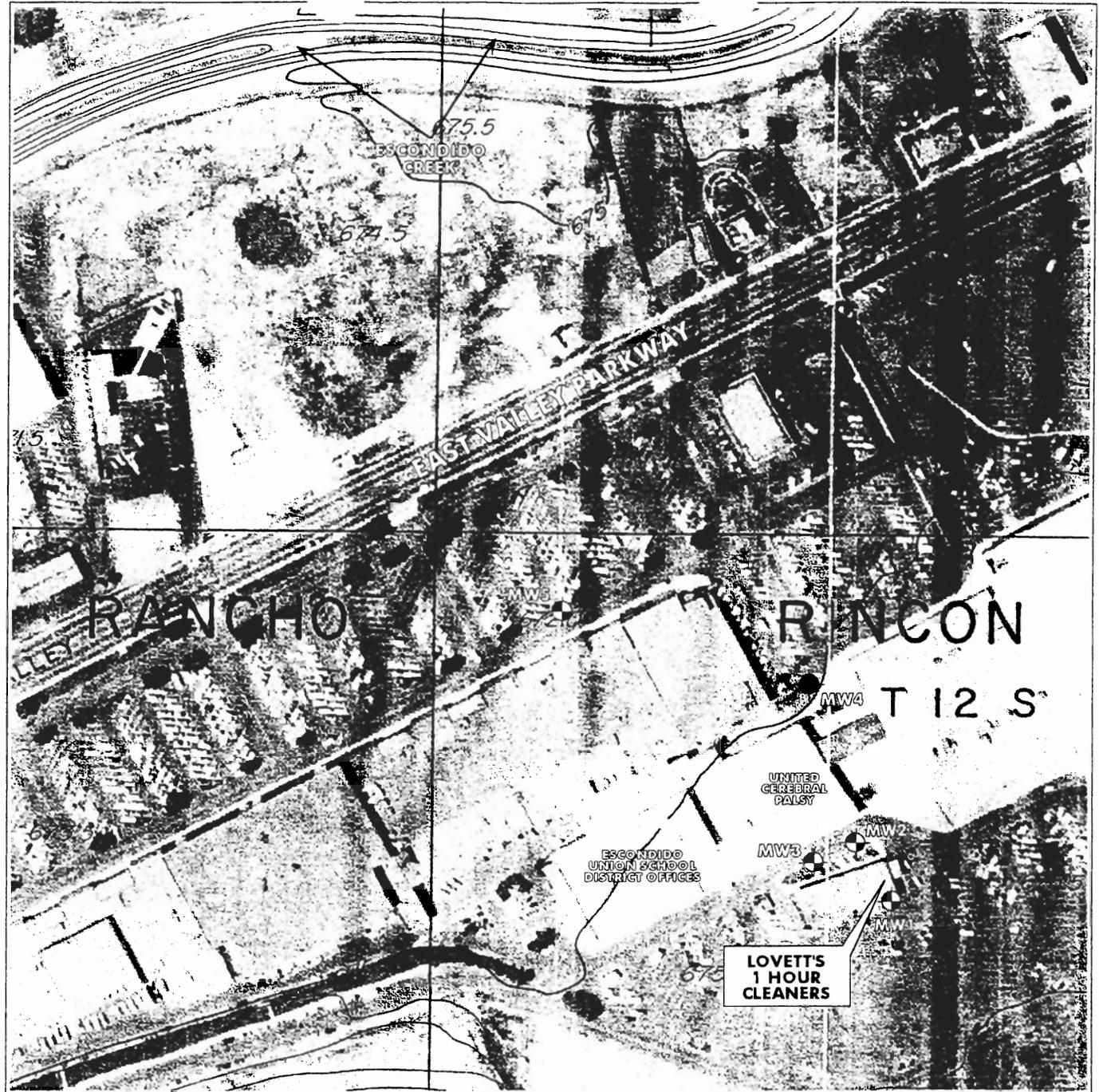
Source: USGS 7.5' series (topographic)



Approximate Graphic Scale
1 Inch = 2000 feet

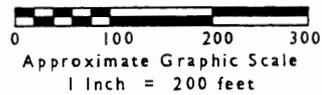


PIC Environmental -SERVICES-	LOVETT'S 1 HOUR CLEANERS 1378 East Grand Avenue Escondido, California	
SITE LOCATION MAP		
Project No: ES7982	Date: February 2004	Figure 1



EXPLANATION

- 
 EXISTING GROUNDWATER MONITORING WELL LOCATION
- 
 ABANDONED GROUNDWATER MONITORING WELL LOCATION



Source:
 County of San Diego Topographic Survey
 Map, Sheet 350-1749, 1974

PIC Environmental
 SERVICES

LOVETT'S 1 HOUR CLEANERS
 1378 East Grand Avenue
 Escondido, California

SITE PLAN

Project No.
ES7982

Date:
February 2004

Figure 2

EXPLANATION

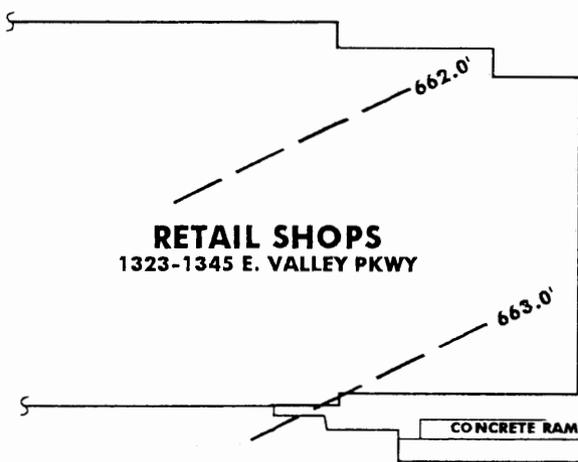
-  GROUNDWATER MONITORING WELL
-  ABANDONED GROUNDWATER MONITORING WELL
-  INFERRED GROUNDWATER FLOW DIRECTION



MW5	
GW Elevation (ft)	661.25
PCE (ug/l)	11
TCE (ug/l)	ND
DCE (ug/l)	ND

MW5

RETAIL SHOPS
1323-1345 E. VALLEY PKWY



ESCONDIDO UNION SCHOOL DISTRICT OFFICES
1330 E. GRAND AVE

MW3	
GW Elevation (ft)	664.67
PCE (ug/l)	8,700
TCE (ug/l)	400
DCE (ug/l)	1,800

MW3

UNITED CEREBRAL PALSY
1390 E. GRAND AVE

MW4

CONCRETE RAMP

FORMER FEDCO BUILDING
1475 E. VALLEY PKWY

MW2	
GW Elevation (ft)	664.96
PCE (ug/l)	6,200
TCE (ug/l)	240
DCE (ug/l)	1,400

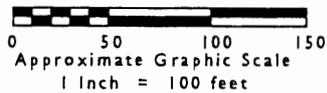
MW2

FORMER TUTOR TIME
1411 E. GRAND AVE

CENTERLINE OF 80 FOOT RIGHT OF WAY FOR THE SAN JACINTO - SAN VICENTE AQUEDUCT UNDERGROUND PIPE

MW1	
GW Elevation (ft)	665.70
PCE (ug/l)	310
TCE (ug/l)	6.9
DCE (ug/l)	ND

MW1



Notes:

1. Groundwater data are from January 9, 2004
2. Groundwater elevations are based on NGVD29 Datum

PIC Environmental SERVICES

LOVETT'S 1 HOUR CLEANERS
1378 East Grand Avenue
Escondido, California

SITE PLAN SHOWING GROUNDWATER DATA

Project No.

ES7892

Date:

February 2004

Figure 3

PIC ENVIRONMENTAL SERVICES 742 GENEVIEVE STREET, SUITE G SOLANA BEACH, CA 92075 (619) 259-3140	GROUNDWATER SAMPLE DATA SHEET	WELL NO. MW1
	PROJECT NAME: LOVETT'S 1 HOUR CLEANERS	JOB NO. ES7982
	LOCATION: 1378 E. GRAND AVE. ESCONDIDO, CA	
	PIC REPRESENTATIVE: S.G. / D.O.	DATE: 1/9/04

CASING DIAMETER: 2"	BOREHOLE DIAMETER: 8"	DEPTH TO WATER: 9.79
MEASURED FROM: T.O.C.	TOTAL DEPTH: 19.2'	ONE BOREHOLE VOLUME*: 11 gal
PURGING METHOD: PUMP	PUMP DEPTH: ± 18.5	PUMP RATE: —

DURATION OF PUMPING		PURGE VOLUME (GAL)	TEMPERATURE (°F)	PH	CONDUCTIVITY (µS/CM)
START	FINISH				
10:30	10:34	5.5	5.52	75.8	3,210
	10:37	11	5.46	78.3	3,400
	10:41	16.5	5.86	79.2	3,260

TOTAL VOLUME PURGED 16.5 gal	TIME FINISHED PURGING 10:41
DEPTH TO WATER AFTER PURGING 11.4'	MAXIMUM DRAWDOWN 1.6'

TIME	DEPTH TO WATER	RESIDUAL DRAWDOWN	PERCENT RECOVERY
11:35	9.71'	0.08'	780%

SAMPLES COLLECTED 4	TIME 11:35
FREE PRODUCT THICKNESS ϕ	
COMMENTS	

BOREHOLE VOLUME = $(.7854 \times \text{WELL DIAMETER}^2 \times \text{GRAVEL PACK POROSITY} + (\text{BOREHOLE DIAMETER}^2 - \text{WELL DIAMETER}^2) \times (\text{WELL DEPTH} - \text{GROUNDWATER DEPTH})) \times \text{WELL DEPTH}$

*GRAVEL PACK POROSITY OF #2/12 SAND = 44.6%

PIC ENVIRONMENTAL SERVICES 742 GENEVIEVE STREET, SUITE G SOLANA BEACH, CA 92075 (619) 259-3140	GROUNDWATER SAMPLE DATA SHEET	WELL NO. MW2
	PROJECT NAME: LOVETT'S 1 HOUR CLEANERS	JOB No. ES7982
	LOCATION: 1378 E. GRAND AVE. ESCONDIDO, CA	
	PIC REPRESENTATIVE: S.G. / D.O.	DATE: 1/9/04

CASING DIAMETER: 2"	BOREHOLE DIAMETER: 8"	DEPTH TO WATER: 9.50
MEASURED FROM: T.O.C.	TOTAL DEPTH: 18.8'	ONE BOREHOLE VOLUME*: 10 gal
PURGING METHOD: PUMP	PUMP DEPTH: ±18'	PUMP RATE: —

DURATION OF PUMPING		PURGE VOLUME (GAL)	TEMPERATURE (°F)	PH	CONDUCTIVITY (µS/CM)
START	FINISH				
11:10	11:15	5	69.2	5.24	2,690
	11:24	10	71.1	5.15	2,750
	11:31	12	72.3	5.14	2,800

TOTAL VOLUME PURGED 12 gal	TIME FINISHED PURGING 11:31
DEPTH TO WATER AFTER PURGING 16'	MAXIMUM DRAWDOWN 6.5'

TIME	DEPTH TO WATER	RESIDUAL DRAWDOWN	PERCENT RECOVERY
11:55	9.92	0.42	780%

SAMPLES COLLECTED 4	TIME 11:55
FREE PRODUCT THICKNESS ∅	
COMMENTS	

BOREHOLE VOLUME = $(7.48\pi/4) \times [\text{WELL DIAMETER}^2 + \text{GRAVEL PACK POROSITY}(\text{BOREHOLE DIAMETER}^2 - \text{WELL DIAMETER}^2)] \times (\text{WELL DEPTH} - \text{GROUNDWATER DEPTH})$

*GRAVEL PACK POROSITY OF #2/12 SAND = 44.6%

PIC ENVIRONMENTAL SERVICES 742 GENEVIEVE STREET, SUITE G SOLANA BEACH, CA 92075 (619) 259-3140	GROUNDWATER SAMPLE DATA SHEET		WELL NO. MW3
	PROJECT NAME: LOVETT'S 1 HOUR CLEANERS		JOB NO. ES7982
	LOCATION: 1378 E. GRAND AVE. ESCONDIDO, CA		
	PIC REPRESENTATIVE: S.G. / D.O.		DATE: 1/9/04

CASING DIAMETER: 2"	BOREHOLE DIAMETER: 8"	DEPTH TO WATER: 9.92'
MEASURED FROM: T.O.C.	TOTAL DEPTH: 18.9'	ONE BOREHOLE VOLUME*: 10 gal
PURGING METHOD: PUMP	PUMP DEPTH: ±18.5'	PUMP RATE: —

DURATION OF PUMPING		PURGE VOLUME (GAL)	TEMPERATURE (°F)	PH	CONDUCTIVITY (µS/CM)
START	FINISH				
10:48	10:52	5	73.5	5.34	3,010
	10:57	10	69.8	5.20	2,860
	11:03	13	70.8	5.18	

TOTAL VOLUME PURGED 13 gal	TIME FINISHED PURGING 11:03
DEPTH TO WATER AFTER PURGING 15.5'	MAXIMUM DRAWDOWN 5.6'

TIME	DEPTH TO WATER	RESIDUAL DRAWDOWN	PERCENT RECOVERY
11:45	10.15	0.23	>80%

SAMPLES COLLECTED 4	TIME 11:45
FREE PRODUCT THICKNESS ∅	
COMMENTS	

BOREHOLE VOLUME = $(7.48\pi/4) \times [\text{WELL DIAMETER}^2 + \text{GRAVEL PACK POROSITY}(\text{BOREHOLE DIAMETER}^2 - \text{WELL DIAMETER}^2)] \times [\text{WELL DEPTH} - \text{GROUNDWATER DEPTH}]$

*GRAVEL PACK POROSITY OF #2/12 SAND = 44.6%

PIC ENVIRONMENTAL SERVICES 742 GENEVIEVE STREET, SUITE G SOLANA BEACH, CA 92075 (619) 259-3140	GROUNDWATER SAMPLE DATA SHEET		WELL NO. MW5
	PROJECT NAME: LOVETT'S 1 HOUR CLEANERS		JOB NO. ES7982
	LOCATION: 1378 E. GRAND AVE. ESCONDIDO, CA		
	PIC REPRESENTATIVE: S.G. / D.O.		DATE: 1/9/04

CASING DIAMETER: 2"	BOREHOLE DIAMETER: 8"	DEPTH TO WATER: 11.32
MEASURED FROM: T.O.C.	TOTAL DEPTH: 19.5'	ONE BOREHOLE VOLUME*: ±10 gal
PURGING METHOD: PUMP	PUMP DEPTH: ±19'	PUMP RATE: —

DURATION OF PUMPING		PURGE VOLUME (GAL)	TEMPERATURE (°F)	PH	CONDUCTIVITY (µS/CM)
START	FINISH				
9:52	9:57	5	70.9	7.83	3,260
	10:01	10	74.6	5.94	3,010
	10:05	15	75.5	5.70	3,090

TOTAL VOLUME PURGED 15 gal	TIME FINISHED PURGING 10:05
DEPTH TO WATER AFTER PURGING 14.8'	MAXIMUM DRAWDOWN 3.5'

TIME	DEPTH TO WATER	RESIDUAL DRAWDOWN	PERCENT RECOVERY
12:05	11.35	0.03'	780%

SAMPLES COLLECTED	TIME
FREE PRODUCT THICKNESS	∅
COMMENTS	

$$\text{BOREHOLE VOLUME} = (7.48\pi/4) \times (\text{WELL DIAMETER}^2 + \text{GRAVEL PACK POROSITY}(\text{BOREHOLE DIAMETER}^2 - \text{WELL DIAMETER}^2)) \times (\text{WELL DEPTH} - \text{GROUNDWATER DEPTH})$$

*GRAVEL PACK POROSITY OF #2/12 SAND = 44.6%

January 15, 2004

Scott Green
PIC Environmental Services
742 Genevieve St, Ste G
Solano Beach, CA 92075
TEL: (760) 445-3508
FAX: (858) 259-3157

RE: LOVETT'S I HOUR CLEANERS, ES7982
Attention: Scott Green

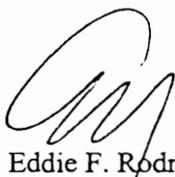
ELAP No.: 1838
NELAP No.: 02107CA
Workorder No.: 066652

Enclosed are the results for sample(s) received on January 12, 2004 by Advanced Technology Laboratories and tested for the parameters indicated in the enclosed chain of custody.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,



Eddie F. Rodriguez
Laboratory Director

This cover letter is an integral part of this analytical report.



Advanced Technology Laboratories

Date: 15-Jan-04

CLIENT: PIC Environmental Services Client Sample ID: MW1
 Lab Order: 066652
 Project: LOVETT'S I HOUR CLEANERS, ES7982 Collection Date: 1/9/2004 11:35:00 AM
 Lab ID: 066652-001A Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_040113A	QC Batch: P04VW009	PrepDate:	Analyst: MFR		
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	1/13/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	1/13/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	1/13/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	1/13/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	1/13/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	1/13/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	1/13/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
2-Chlorotoluene	ND	5.0	µg/L	1	1/13/2004
4-Chlorotoluene	ND	5.0	µg/L	1	1/13/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	1/13/2004
Benzene	ND	5.0	µg/L	1	1/13/2004
Bromobenzene	ND	5.0	µg/L	1	1/13/2004
Bromodichloromethane	ND	5.0	µg/L	1	1/13/2004
Bromoform	ND	5.0	µg/L	1	1/13/2004
Bromomethane	ND	5.0	µg/L	1	1/13/2004
Carbon tetrachloride	ND	5.0	µg/L	1	1/13/2004
Chlorobenzene	ND	5.0	µg/L	1	1/13/2004
Chloroethane	ND	5.0	µg/L	1	1/13/2004
Chloroform	5.1	5.0	µg/L	1	1/13/2004
Chloromethane	ND	5.0	µg/L	1	1/13/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	1/13/2004
Dibromochloromethane	ND	5.0	µg/L	1	1/13/2004
Dibromomethane	ND	5.0	µg/L	1	1/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified

Advanced Technology Laboratories

Date: 15-Jan-04

CLIENT:	PIC Environmental Services	Client Sample ID:	MW1
Lab Order:	066652		
Project:	LOVETT'S 1 HOUR CLEANERS, ES7982	Collection Date:	1/9/2004 11:35:00 AM
Lab ID:	066652-001A	Matrix:	GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_040113A	QC Batch: P04VW009	PrepDate:	Analyst: MFR		
Dichlorodifluoromethane	ND	5.0	µg/L	1	1/13/2004
Ethylbenzene	ND	5.0	µg/L	1	1/13/2004
Hexachlorobutadiene	ND	5.0	µg/L	1	1/13/2004
Isopropylbenzene	ND	5.0	µg/L	1	1/13/2004
m,p-Xylene	ND	5.0	µg/L	1	1/13/2004
Methylene chloride	ND	5.0	µg/L	1	1/13/2004
n-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
n-Propylbenzene	ND	5.0	µg/L	1	1/13/2004
Naphthalene	ND	5.0	µg/L	1	1/13/2004
o-Xylene	ND	5.0	µg/L	1	1/13/2004
sec-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
Styrene	ND	5.0	µg/L	1	1/13/2004
tert-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
Tetrachloroethene	310	5.0	µg/L	1	1/13/2004
Toluene	ND	5.0	µg/L	1	1/13/2004
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	1/13/2004
Trichloroethene	6.9	5.0	µg/L	1	1/13/2004
Trichlorofluoromethane	ND	5.0	µg/L	1	1/13/2004
Vinyl chloride	ND	5.0	µg/L	1	1/13/2004

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
	J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	DO - Surrogate Diluted Out	Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 15-Jan-04

CLIENT: PIC Environmental Services Client Sample ID: MW2
 Lab Order: 066652
 Project: LOVETT'S 1 HOUR CLEANERS, ES7982 Collection Date: 1/9/2004 11:55:00 AM
 Lab ID: 066652-002A Matrix: GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_040113A	QC Batch: P04VW009	PrepDate:	Analyst: MFR		
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	1/13/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	1/13/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	1/13/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	1/13/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	1/13/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	1/13/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	1/13/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
2-Chlorotoluene	ND	5.0	µg/L	1	1/13/2004
4-Chlorotoluene	ND	5.0	µg/L	1	1/13/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	1/13/2004
Benzene	ND	5.0	µg/L	1	1/13/2004
Bromobenzene	ND	5.0	µg/L	1	1/13/2004
Bromodichloromethane	ND	5.0	µg/L	1	1/13/2004
Bromoform	ND	5.0	µg/L	1	1/13/2004
Bromomethane	ND	5.0	µg/L	1	1/13/2004
Carbon tetrachloride	ND	5.0	µg/L	1	1/13/2004
Chlorobenzene	ND	5.0	µg/L	1	1/13/2004
Chloroethane	ND	5.0	µg/L	1	1/13/2004
Chloroform	5.4	5.0	µg/L	1	1/13/2004
Chloromethane	ND	5.0	µg/L	1	1/13/2004
cis-1,2-Dichloroethene	1400	250	µg/L	50	1/13/2004
Dibromochloromethane	ND	5.0	µg/L	1	1/13/2004
Dibromomethane	ND	5.0	µg/L	1	1/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 15-Jan-04

CLIENT: PIC Environmental Services **Client Sample ID:** MW2
Lab Order: 066652
Project: LOVETT'S I HOUR CLEANERS, ES7982 **Collection Date:** 1/9/2004 11:55:00 AM
Lab ID: 066652-002A **Matrix:** GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID:	MS1_040113A	QC Batch:	P04VW009	PrepDate:	Analyst:	MFR
Dichlorodifluoromethane	ND	5.0	µg/L	1	1/13/2004	
Ethylbenzene	ND	5.0	µg/L	1	1/13/2004	
Hexachlorobutadiene	ND	5.0	µg/L	1	1/13/2004	
Isopropylbenzene	ND	5.0	µg/L	1	1/13/2004	
m,p-Xylene	ND	5.0	µg/L	1	1/13/2004	
Methylene chloride	ND	5.0	µg/L	1	1/13/2004	
n-Butylbenzene	ND	5.0	µg/L	1	1/13/2004	
n-Propylbenzene	ND	5.0	µg/L	1	1/13/2004	
Naphthalene	ND	5.0	µg/L	1	1/13/2004	
o-Xylene	ND	5.0	µg/L	1	1/13/2004	
sec-Butylbenzene	ND	5.0	µg/L	1	1/13/2004	
Styrene	ND	5.0	µg/L	1	1/13/2004	
tert-Butylbenzene	ND	5.0	µg/L	1	1/13/2004	
Tetrachloroethene	6200	250	µg/L	50	1/13/2004	
Toluene	ND	5.0	µg/L	1	1/13/2004	
trans-1,2-Dichloroethene	44	5.0	µg/L	1	1/13/2004	
Trichloroethene	240	5.0	µg/L	1	1/13/2004	
Trichlorofluoromethane	ND	5.0	µg/L	1	1/13/2004	
Vinyl chloride	ND	5.0	µg/L	1	1/13/2004	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 15-Jan-04

CLIENT:	PIC Environmental Services	Client Sample ID:	MW3
Lab Order:	066652		
Project:	LOVETT'S I HOUR CLEANERS, ES7982	Collection Date:	1/9/2004 11:45:00 AM
Lab ID:	066652-003A	Matrix:	GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_040113A	QC Batch: P04VW009	PrepDate:	Analyst: MFR
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1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	1/13/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	1/13/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	1/13/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	1/13/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	1/13/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	1/13/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	1/13/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
2-Chlorotoluene	ND	5.0	µg/L	1	1/13/2004
4-Chlorotoluene	ND	5.0	µg/L	1	1/13/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	1/13/2004
Benzene	ND	5.0	µg/L	1	1/13/2004
Bromobenzene	ND	5.0	µg/L	1	1/13/2004
Bromodichloromethane	ND	5.0	µg/L	1	1/13/2004
Bromoform	ND	5.0	µg/L	1	1/13/2004
Bromomethane	ND	5.0	µg/L	1	1/13/2004
Carbon tetrachloride	ND	5.0	µg/L	1	1/13/2004
Chlorobenzene	ND	5.0	µg/L	1	1/13/2004
Chloroethane	ND	5.0	µg/L	1	1/13/2004
Chloroform	ND	5.0	µg/L	1	1/13/2004
Chloromethane	ND	5.0	µg/L	1	1/13/2004
cis-1,2-Dichloroethene	1800	250	µg/L	50	1/13/2004
Dibromochloromethane	ND	5.0	µg/L	1	1/13/2004
Dibromomethane	ND	5.0	µg/L	1	1/13/2004

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
	J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	DO - Surrogate Diluted Out	Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 15-Jan-04

CLIENT:	PIC Environmental Services	Client Sample ID:	MW3
Lab Order:	066652		
Project:	LOVETT'S 1 HOUR CLEANERS, ES7982	Collection Date:	1/9/2004 11:45:00 AM
Lab ID:	066652-003A	Matrix:	GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_040113A	QC Batch: P04VW009	PrepDate:	Analyst: MFR		
Dichlorodifluoromethane	ND	5.0	µg/L	1	1/13/2004
Ethylbenzene	ND	5.0	µg/L	1	1/13/2004
Hexachlorobutadiene	ND	5.0	µg/L	1	1/13/2004
Isopropylbenzene	ND	5.0	µg/L	1	1/13/2004
m,p-Xylene	ND	5.0	µg/L	1	1/13/2004
Methylene chloride	ND	5.0	µg/L	1	1/13/2004
n-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
n-Propylbenzene	ND	5.0	µg/L	1	1/13/2004
Naphthalene	ND	5.0	µg/L	1	1/13/2004
o-Xylene	ND	5.0	µg/L	1	1/13/2004
sec-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
Styrene	ND	5.0	µg/L	1	1/13/2004
tert-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
Tetrachloroethene	8700	250	µg/L	50	1/13/2004
Toluene	ND	5.0	µg/L	1	1/13/2004
trans-1,2-Dichloroethene	56	5.0	µg/L	1	1/13/2004
Trichloroethene	400	250	µg/L	50	1/13/2004
Trichlorofluoromethane	ND	5.0	µg/L	1	1/13/2004
Vinyl chloride	ND	5.0	µg/L	1	1/13/2004

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
	J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	DO - Surrogate Diluted Out	Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 15-Jan-04

CLIENT: PIC Environmental Services **Client Sample ID:** MW5
Lab Order: 066652
Project: LOVETT'S I HOUR CLEANERS, ES7982 **Collection Date:** 1/9/2004 12:05:00 PM
Lab ID: 066652-004A **Matrix:** GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_040113A	QC Batch: P04VW009	PrepDate:	Analyst: MFR		
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,1-Trichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,2,2-Tetrachloroethane	ND	5.0	µg/L	1	1/13/2004
1,1,2-Trichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloroethane	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloroethene	ND	5.0	µg/L	1	1/13/2004
1,1-Dichloropropene	ND	5.0	µg/L	1	1/13/2004
1,2,3-Trichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2,3-Trichloropropane	ND	5.0	µg/L	1	1/13/2004
1,2,4-Trichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2,4-Trimethylbenzene	ND	5.0	µg/L	1	1/13/2004
1,2-Dibromo-3-chloropropane	ND	5.0	µg/L	1	1/13/2004
1,2-Dibromoethane	ND	5.0	µg/L	1	1/13/2004
1,2-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,2-Dichloroethane	ND	5.0	µg/L	1	1/13/2004
1,2-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
1,3,5-Trimethylbenzene	ND	5.0	µg/L	1	1/13/2004
1,3-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
1,3-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
1,4-Dichlorobenzene	ND	5.0	µg/L	1	1/13/2004
2,2-Dichloropropane	ND	5.0	µg/L	1	1/13/2004
2-Chlorotoluene	ND	5.0	µg/L	1	1/13/2004
4-Chlorotoluene	ND	5.0	µg/L	1	1/13/2004
4-Isopropyltoluene	ND	5.0	µg/L	1	1/13/2004
Benzene	ND	5.0	µg/L	1	1/13/2004
Bromobenzene	ND	5.0	µg/L	1	1/13/2004
Bromodichloromethane	ND	5.0	µg/L	1	1/13/2004
Bromoform	ND	5.0	µg/L	1	1/13/2004
Bromomethane	ND	5.0	µg/L	1	1/13/2004
Carbon tetrachloride	ND	5.0	µg/L	1	1/13/2004
Chlorobenzene	ND	5.0	µg/L	1	1/13/2004
Chloroethane	ND	5.0	µg/L	1	1/13/2004
Chloroform	ND	5.0	µg/L	1	1/13/2004
Chloromethane	ND	5.0	µg/L	1	1/13/2004
cis-1,2-Dichloroethene	ND	5.0	µg/L	1	1/13/2004
Dibromochloromethane	ND	5.0	µg/L	1	1/13/2004
Dibromomethane	ND	5.0	µg/L	1	1/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified



Advanced Technology Laboratories

Date: 15-Jan-04

CLIENT: PIC Environmental Services **Client Sample ID:** MW5
Lab Order: 066652
Project: LOVETT'S 1 HOUR CLEANERS, ES7982 **Collection Date:** 1/9/2004 12:05:00 PM
Lab ID: 066652-004A **Matrix:** GROUND WATER

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
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VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_040113A	QC Batch: P04VW009	PrepDate:	Analyst: MFR		
Dichlorodifluoromethane	ND	5.0	µg/L	1	1/13/2004
Ethylbenzene	ND	5.0	µg/L	1	1/13/2004
Hexachlorobutadiene	ND	5.0	µg/L	1	1/13/2004
Isopropylbenzene	ND	5.0	µg/L	1	1/13/2004
m,p-Xylene	ND	5.0	µg/L	1	1/13/2004
Methylene chloride	ND	5.0	µg/L	1	1/13/2004
n-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
n-Propylbenzene	ND	5.0	µg/L	1	1/13/2004
Naphthalene	ND	5.0	µg/L	1	1/13/2004
o-Xylene	ND	5.0	µg/L	1	1/13/2004
sec-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
Styrene	ND	5.0	µg/L	1	1/13/2004
tert-Butylbenzene	ND	5.0	µg/L	1	1/13/2004
Tetrachloroethene	11	5.0	µg/L	1	1/13/2004
Toluene	ND	5.0	µg/L	1	1/13/2004
trans-1,2-Dichloroethene	ND	5.0	µg/L	1	1/13/2004
Trichloroethene	ND	5.0	µg/L	1	1/13/2004
Trichlorofluoromethane	ND	5.0	µg/L	1	1/13/2004
Vinyl chloride	ND	5.0	µg/L	1	1/13/2004

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike/Surrogate outside of limits due to matrix interferen
 J - Analyte detected below quantitation limits H - Sample exceeded analytical holding time
 B - Analyte detected in the associated Method Blank E - Value above quantitation range
 DO - Surrogate Diluted Out Results are wet unless otherwise specified





Advanced Technology Laboratories

Date: 15-Jan-04

Advanced Technology Laboratories

CLIENT: PIC Environmental Services

Work Order: 066652

Project: LOVETT'S 1 HOUR CLEANERS, ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP

Sample ID: P040130MB1	SampType: MBLK	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS1_040113A						
Client ID: ZZZZ	Batch ID: P04VW009	TestNo: EPA 8260B		Analysis Date: 1/13/2004	SeqNo: 506065						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	5.0									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time
 Calculations are based on raw values



CLIENT: PIC Environmental Services
Work Order: 066652

Project: LOVETT'S 1 HOUR CLEANERS, ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP

Sample ID: P040130MB1	SampType: MBLK	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS1_040113A						
Client ID: ZZZZ	Batch ID: P04VW009	TestNo: EPA 8260B		Analysis Date: 1/13/2004	SeqNo: 506065						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Carbon tetrachloride	ND	5.0									
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	10									
Methylene chloride	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									
Trichlorofluoromethane	ND	5.0									
Vinyl chloride	ND	5.0									
Surr: 1,2-Dichloroethane-d4	54.92	5.0	50	0	110	69	140	0	0	0	
Surr: 4-Bromofluorobenzene	49.99	5.0	50	0	100	89	146	0	0	0	
Surr: Dibromofluoromethane	51.14	5.0	50	0	102	85	130	0	0	0	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time



CLIENT: PIC Environmental Services
Work Order: 066652
Project: LOVETT'S 1 HOUR CLEANERS, ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP

Sample ID: P040130MB1	SampType: MBLK	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS1_040113A						
Client ID: ZZZZ	Batch ID: P04VW009	TestNo: EPA 8260B		Analysis Date: 1/13/2004	SeqNo: 506065						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Toluene-d8	55.74	5.0	50	0	111	89	142	0	0	0	0

Sample ID: P040130LC1	SampType: LCS	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS1_040113A						
Client ID: ZZZZ	Batch ID: P04VW009	TestNo: EPA 8260B		Analysis Date: 1/13/2004	SeqNo: 506062						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20.59	5.0	20	0	103	49	159	0	0	0	0
Benzene	22.63	5.0	20	0	113	62	122	0	0	0	0
Chlorobenzene	21.46	5.0	20	0	107	63	123	0	0	0	0
Toluene	21.97	5.0	20	0	110	61	127	0	0	0	0
Trichloroethene	20.56	5.0	20	0	103	64	139	0	0	0	0
Surr: 1,2-Dichloroethane-d4	50.23	5.0	50	0	100	69	140	0	0	0	0
Surr: 4-Bromofluorobenzene	52.72	5.0	50	0	105	89	146	0	0	0	0
Surr: Dibromofluoromethane	48.35	5.0	50	0	96.7	85	130	0	0	0	0
Surr: Toluene-d8	56.01	5.0	50	0	112	89	142	0	0	0	0

Sample ID: P040130MB1MS	SampType: MS	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS1_040113A						
Client ID: ZZZZ	Batch ID: P04VW009	TestNo: EPA 8260B		Analysis Date: 1/13/2004	SeqNo: 506063						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20.56	5.0	20	0	103	49	159	0	0	0	0
Benzene	22.09	5.0	20	0	110	62	122	0	0	0	0
Chlorobenzene	21.31	5.0	20	0	107	63	123	0	0	0	0
Toluene	21.78	5.0	20	0	109	61	127	0	0	0	0
Trichloroethene	19.69	5.0	20	0	98.4	64	139	0	0	0	0
Surr: 1,2-Dichloroethane-d4	52.29	5.0	50	0	105	69	140	0	0	0	0
Surr: 4-Bromofluorobenzene	53.89	5.0	50	0	108	89	146	0	0	0	0
Surr: Dibromofluoromethane	49	5.0	50	0	98	85	130	0	0	0	0
Surr: Toluene-d8	56.75	5.0	50	0	114	89	142	0	0	0	0

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time
 Calculations are based on raw values



CLIENT: PIC Environmental Services
Work Order: 066652
Project: LOVETT'S 1 HOUR CLEANERS, ES7982

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP

Sample ID: P040130MB1MSD	SampType: MSD	TestCode: 8260_WP	Units: µg/L	Prep Date:	Run ID: MS1_040113A						
Client ID: ZZZZZ	Batch ID: P04VW009	TestNo: EPA 8260B		Analysis Date: 1/13/2004	SeqNo: 506064						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	20.85	5.0	20	0	104	49	159	20.56	1.40	30	
Benzene	22.39	5.0	20	0	112	62	122	22.09	1.35	30	
Chlorobenzene	21.75	5.0	20	0	109	63	123	21.31	2.04	30	
Toluene	22.06	5.0	20	0	110	61	127	21.78	1.28	30	
Trichloroethene	20.1	5.0	20	0	100	64	139	19.69	2.06	30	
Surr: 1,2-Dichloroethane-d4	53.88	5.0	50	0	108	69	140	0	0	30	
Surr: 4-Bromofluorobenzene	53.32	5.0	50	0	107	89	146	0	0	30	
Surr: Dibromofluoromethane	49.83	5.0	50	0	99.7	85	130	0	0	30	
Surr: Toluene-d8	56.57	5.0	50	0	113	89	142	0	0	30	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 R - RPD outside accepted recovery limits
 S - Spike Recovery outside accepted recovery limits
 B - Analyte detected in the associated Method Blank
 DO - Surrogate dilute out
 H - Sample exceeded holding time
 Calculations are based on raw values

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY:

Advanced Technology Laboratories
 3275 Walnut Avenue
 Signal Hill, CA 90807
 (562) 989-4045 • Fax (562) 989-4040

Client: **PIC ENVIRONMENTAL SERVICES**
 Attn: **SCOTT GREEN**
 Address: **742 GENEVIEVE ST SUITE G**
 City: **SOLANA BEACH** State: **CA** Zip Code: **92075** TEL: **(858) 259-3140**
 FAX: **(858) 259-3157**

Project Name: **LOVETT'S 1 HOUR CLEANERS** Project #: **ESTAB2**
 Sampler: **SCOTT GREEN**

Method of Transport: Client ATL FEDEX Other:
 Sample Condition Upon Receipt: 1. CHILLED 2. HEADSPACE (VOA) 3. CONTAINER INTACT 4. SEALED 5. # OF SPLS MATCH COC 6. PRESERVED

Relinquished by: (Signature and Printed Name) **SCOTT GREEN** Date: **1-12-04** Time: **3:10P**
 Received by: (Signature and Printed Name) **Scott Green** Date: **1-12-04** Time: **12:30P**
 Relinquished by: (Signature and Printed Name) **Scott Green** Date: **1-12-04** Time: **3:10P**
 Received by: (Signature and Printed Name) **Scott Green** Date: **1-12-04** Time: **12:30P**

Special Instructions/Comments:

Bill To: **SAME**
 Attn: **SAME**
 Co: **SAME**
 Address: **SAME**
 City: **SAME** State: **SAME** Zip: **SAME**

Send Report To: **SAME**
 Attn: **SAME**
 Co: **SAME**
 Address: **SAME**
 City: **SAME** State: **SAME** Zip: **SAME**

I hereby authorize ATL to perform the work indicated below:
 Project Mgr / Submitter: **SCOTT GREEN** Date: **1/7/04**
 Signature: *Scott Green*

Sample/Records - Archival & Disposal
 Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.
Storage Fees (applies when storage is requested):
 • Sample : \$2.00 / sample / mo (after 45 days)
 • Records : \$1.00 / ATL workorder / mo (after 1 year)

ITEM	LAB USE ONLY:		Sample Description	Date	Time	Sample I.D. / Location	ANALYSIS REQUESTED				REMARKS	
	Batch #	Lab No.					801A (Pesticides)	8208 (PCB)	8209 (Volatiles)	820C (GMA)		8018 (Total Metal)
	004652-001	MW1		1/9	11:55		X	X	X	X	X	
	002	MW2			11:55		X	X	X	X	X	
	003	MW3			11:45		X	X	X	X	X	
	004	MW5			12:05		X	X	X	X	X	

Circle or Add Analyst(s) Requested: **WATER**, **GROUND WATER**, **WASTEWATER**

SPECIFY APPROPRIATE MATRIX: **WATER**, **GROUND WATER**, **WASTEWATER**

Container(s): TAT # Type: **E 4 VIG**

Container Types: T=Tube V=VOA L=Liter P=Pin J=Jar B=Tedlar G=Glass P=Plastic M=Metal

TAT: A=Overnight ≤ 24 hr B=Emergency Next workday C=Critical 2 Workdays D=Urgent 3 Workdays E=Routine 7 Workdays

Preservatives: H=HCl N=HNO₃ S=H₂SO₄ C=4°C Z=Zn(Ac) O=NaOH T=Na₂S₂O₃

* TAT starts 8 a.m. following day if samples received after 3 p.m.

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.



E-6

PIC ENVIRONMENTAL SERVICES
742 GENEVIEVE STREET, SUITE G, SOLANA BEACH, CA 92075
858/259-3140 FAX: 858/259-3157

May 18, 2004

Mr. Jim Schuck
County of San Diego
Department of Environmental Health
P.O. Box 129261
San Diego, CA 92112-9261

04 MAY 21 AM 8:49

Dear Mr. Schuck:

RE: Request for Case Closure/No Further Action
Lovett's 1 Hour Cleaners
1351 E. Grand Avenue, Escondido, California
DEH Reference #H11085-001

PIC Environmental Services (PIC) respectfully submits this correspondence pursuant to a request made by staff at the County of San Diego, Department of Environmental Health (DEH) in support of our request to close the case file with no further action required for the above-referenced Site Assessment and Mitigation (SAM) facility. The purpose of this correspondence is to address the potential impact that a local plume of groundwater impacted by dissolved chlorinated volatile organic compounds (VOCs) will have on 1) surface waters in the Escondido Creek drainage basin, and 2) groundwater production wells. In our judgement, surface waters and groundwater production in the site vicinity will not be adversely impacted by the dissolved VOCs that were released at the subject SAM site for reasons that are presented as follows:

1. Site History and Future Land Use.

The subject property at 1351 E. Grand Avenue is an approximately 1,800 square-foot tenant space that has operated as a retail dry cleaner and laundry facility since approximately 1973. Dry cleaning equipment at the site was upgraded in approximately 1994 according to the current operator. It appears that dry cleaning solvent containing tetrachloroethene (PCE) was released into subsurface soil sometime between 1973 and 1994, probably as a result of poor housekeeping practices by previous operators. There have apparently not been any significant releases of PCE at the site since 1994. Furthermore, dry cleaning operations will terminate at the site within the next 12 months and the building will be demolished and paved over into a parking lot for a proposed Wal-Mart department store according to Mr. Norm La Caze, La Caze Development Company. In summary, PCE releases have terminated and further releases will not occur because the subject property will be converted into an asphalt-paved parking lot.

2. Surface Waters Will Not Be Adversely Impacted.

The inferred concentration contours for dissolved total VOCs in groundwater are illustrated on the attached Figure 1. Concentrations of total VOCs drop off from over 10,000 ug/l in monitoring well MW-3, located near the source, to slightly more than 10 ug/l in MW-5, located approximately 450 feet down-gradient (northwest) of MW-3. The plume of dissolved VOCs in groundwater probably does not extend beyond the northern portion of the Escondido Village Plaza shopping center. This plume appears generally stable based on groundwater monitoring data and our understanding that releases of PCE solvent terminated in 1994. The distance to Escondido Creek, the nearest surface water feature, is approximately 500 feet north of the inferred leading edge of the plume (1 ug/l total VOCs). It is our conclusion, therefore, that surface waters in Escondido Creek will not be impacted by VOCs as a result of the unauthorized release at the subject property.

3. Groundwater Production Wells Will Not Be Adversely Impacted.

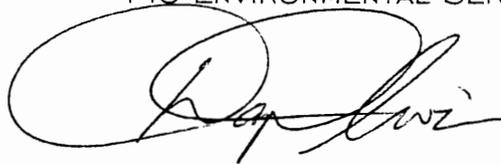
There are no groundwater production wells located within 1,000 feet of the subject property based on research and a field survey performed by PIC personnel. Since the site and vicinity are fully developed for urban retail and residential land uses, it appears unlikely that any new groundwater production wells will be installed. Although groundwater in the site vicinity is designated for beneficial uses, there is apparently no current extraction of groundwater occurring in the vicinity of the subject property (i.e., within 1,000 feet). Furthermore, extraction of shallow groundwater throughout much of Escondido is avoided because water quality is poor due to high nitrate concentrations. In light of these factors, we have concluded that there are no groundwater production wells that are/will be adversely impacted by dissolved VOCs in the vicinity of the subject site.

4. VOCs Will Dissipate By Processes of Natural Attenuation.

In our judgement, dissolved VOCs in groundwater near the subject property will dissipate by destructive and non-destructive mechanisms of natural attenuation. A common destructive process for PCE degradation is an electron transfer process called reductive dechlorination. In this process, hydrogen atoms are sequentially substituted for a chlorine atom in the contaminant molecules. PCE turns to trichloroethene (TCE), TCE turns into dichloroethene (DCE), and so forth. This process occurs naturally in an anaerobic environment in order to aid microorganisms respire. This process is apparently occurring based on analytical data for groundwater samples recovered at the site. Three (3) non-destructive mechanisms that will also continue to cause a decrease in groundwater contaminant concentrations near the subject site are dispersion, dilution, and sorption.

In conclusion, PIC requests case closure with no further action required on behalf of La Caze Development Company. If you have any questions regarding this matter, please contact Danny Oliver at (858) 259-3140.

Respectfully submitted,
PIC ENVIRONMENTAL SERVICES

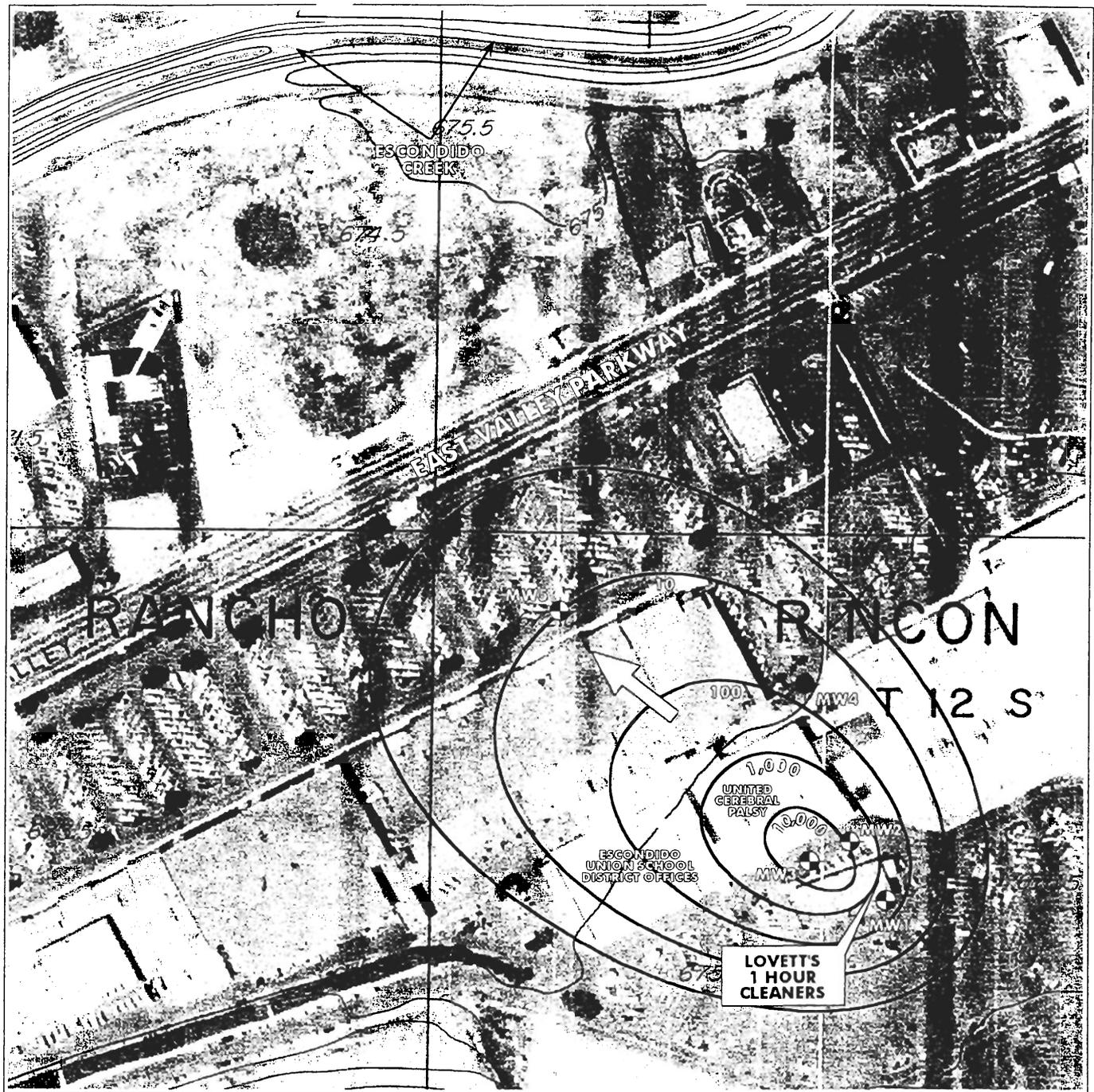


Daniel C. Oliver
California Registered Geologist No. 4781
President



cc: Mr. Norm La Caze, La Caze Development Company

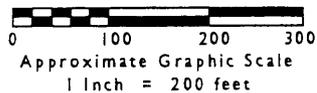
ES7982.LCDC.NFA.01



EXPLANATION

- EXISTING GROUNDWATER MONITORING WELL LOCATION
- ABANDONED GROUNDWATER MONITORING WELL LOCATION
- INFERRED CONTOUR OF TOTAL VOCs CONCENTRATION IN UG/L (1/9/04)
- INFERRED GROUNDWATER GRADIENT

Source:
 County of San Diego Topographic Survey
 Map, Sheet 350-1749, 1974



PIC Environmental SERVICES	LOVETT'S 1 HOUR CLEANERS 1378 East Grand Avenue Escondido, California	
SITE PLAN SHOWING INFERRED TOTAL VOCs CONCENTRATION CONTOURS		
Project No. ES7982	Date May 2004	Figure 1

E-7
JCS



County of San Diego

GARY W. ERBECK
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
(619) 338-2222 FAX (619) 338-2377
1-800-253-9933

RICHARD HAAS
ASSISTANT DIRECTOR

August 6, 2004

Mr. Norman La Caze
La Caze Escondido Partnership
2601 Airport Dr. No. 300
Torrance, CA 90505

Dear Mr. La Caze:

VOLUNTARY ASSISTANCE PROGRAM
DEH FILE NO. H11085-001
LOVETT'S DRY CLEANER
1378 E. GRAND AVENUE, ESCONDIDO, CA 92027-3002

The County of San Diego Department of Environmental Health (DEH) has completed review of the environmental documentation prepared by PIC Environmental Services for the property referenced above. With the provision that the information provided to this agency was accurate and representative of existing conditions, it is the position of this office that **no further action is required at this time.**

Please be advised that this letter does not relieve you of any liability under the California Health and Safety Code or the Porter Cologne Water Quality Control Act. If previously unidentified contamination is discovered which may affect public health, safety and/or water quality, additional site investigation and cleanup may be necessary.

Thank you for your efforts in resolving this matter. Please contact Jim Schuck of the Site Assessment and Mitigation Program, at (619) 338-2908, if you require additional assistance.

Sincerely,

GEORGE McCANDLESS, Program Manager
Supervising Environmental Health Specialist
Site Assessment and Mitigation Program

GM:JCS:kd

Enclosure

cc: John Anderson, Regional Water Quality Control Board
Daniel C. Oliver, PIC Environmental Services

Case Closure Summary Voluntary Assistance Program

I. AGENCY INFORMATION

DATE: August 4, 2004

Agency Name: County of San Diego, Environmental Health, SAM	Address: P.O. Box 129261	
City/State/ZIP: San Diego, CA 92112-9261	Phone: (619) 338-2222	FAX: (619) 338-2377
DEH Staff Person: Jim Schuck	Title: Environmental Health Specialist	

II. CASE INFORMATION

Case No. H11085-001	RWQCB Case No.	
Site Name: Lovett's Dry Cleaner	Site Address: 1378 E Grand Av, Escondido, CA 92027-3022	
Property Owner: The Bulen Trust, c/o Escondido Venture 99, LLC -- 2601 Airport Drive, Suite 300, Torrance, CA 90505		
Responsible/Requesting Parties	Address	Phone Number
La Caze Development Norman La Caze	2601 Airport Drive, Suite 300 Torrance, Ca 90505	310-534-0411
Type of Case: Voluntary Assistance		
Agency notification of DEH Oversight: DTSC: 10/15/1998		RWQCB: 10/15/1998

III. SITE CHARACTERIZATION AND/OR INFORMATION

Purpose of Investigation: To determine the extent of contamination and to assess the impacts		Substances Investigated: Chlorinated Hydrocarbons	
Site Characterization complete? Yes		5/18/2004	
Monitoring Wells Installed? Yes	Total Number: 5	Proper Screened Interval? Yes	Number of Decommissioned Wells: 1
Range of groundwater levels on the site? 8.85 - 11.87 (Measured)		Groundwater Flow Direction: Northwest (Measured)	
Most Sensitive Current Use: Existing Beneficial Groundwater Use: Mun, Agr, Ind Existing Beneficial Surface Water Use: Mun, Agr, Rec1, Rec2 And Potential: Ind			
Are Drinking Water Wells Affected? No		RWQCB Basin Number: 904.62-Escondido Hydrologic Sub Area	
Is Surface Water Affected? No		Nearest Surface Water name: Escondido Creek	
Off-Site Beneficial Use Impacts (addresses/locations): None Identified			
TREATMENT AND DISPOSAL OF AFFECTED MATERIAL			
Material	Amount	(Include Units)	Action (Treatment or Disposal)
Soil	1	Cubic Yard	Disposal (U.S. Filter, Los Angeles)
Water	2	55 Gal Drums	Recycled (U.S. Filter, Los Angeles)
Soil	3.3	Cubic Yards	Disposal (Miramar Landfill)
			Date
			2/13/2004
			2/13/2004
			2/27/2003

Case Closure Summary Voluntary Assistance Program

III. SITE CHARACTERIZATION AND/OR INFORMATION (Continued)

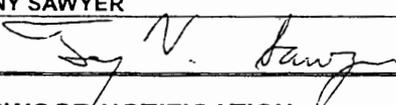
H11085-001

MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS	MAXIMUM	REMAINING
SOIL		
cis-1,2-Dichloroethene	= 2.93 mg/kg	= 2.93 mg/kg
Tetrachloroethene (PCE)	= 55 mg/kg	= 55 mg/kg
Trichloroethene (TCE)	= 260 mg/kg	= 260 mg/kg
WATER		
cis-1,2-Dichloroethene	= 3930 ug/l	= 1800 ug/l
Tetrachloroethene (PCE)	= 14000 ug/l	= 8700 ug/l
Trichloroethene (TCE)	= 1100 ug/l	= 400 ug/l
<p>Comments: From the mid-1970s to 1994 this existing dry cleaning facility generated waste liquid dry cleaning solvent (condensate) some of which made its way to the subsurface environment and contaminated soil and groundwater. Current property development plans call for the demolition of the dry cleaning facility and subsequently paving the entire area for the new shopping center parking lot. The chemicals detected in the subsurface environment included Tetrachloroethene (PCE), Trichloroethene (TCE), and cis-1,2-Dichloroethene. The environmental consultant, PIC Environmental Services (PIC) have concluded the following: 1) the extent of soil and groundwater contamination has been adequately defined 2) the volume of contaminated soil remaining at the property is 815 cubic yards, 3) the plume of contaminated groundwater is stable and does not threaten the beneficial use of water resources and 4) the residual subsurface contamination does not pose an existing or potential threat to human health. DEH concurs with these conclusions.</p>		

IV. CLOSURE

<p>Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? No*</p> <p>Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? No*</p> <p>* Review of the groundwater monitoring data confirms the stability of the existing hydrocarbon plume. DEH concurs that the mitigation strategy of natural attenuation will be reasonably protective for all beneficial uses of water resources.</p>
<p>Does corrective action protect public health for current land use? Yes</p> <p style="padding-left: 40px;">Case review based on land use as: Commercial Building/Parking Lot (Shopping Center)</p>
<p>Are there other issues DEH needs to follow-up on: No</p>
<p>Site Management Requirements: DEH recommends retaining an environmental consultant to observe the final stages of building (dry cleaning facility) demolition and any subsurface grading work to ensure that any contaminated soil encountered is managed in accordance with the legal requirements at that time.</p>
<p>Should corrective action be reviewed if land use changes? Yes</p>
<p>List Enforcement Actions Taken: None</p>
<p>List Enforcement Actions Rescinded: None</p>
<p>Is this account up to date and current? Yes</p>

V. LOCAL AGENCY REPRESENTATIVE DATA

Name: TONY SAWYER	Title: Hydrogeologist
Signature: 	Date: 8-5-04

VI. RWQCB NOTIFICATION

Date Submitted to RWQCB: NA - VAP Case	RWQCB Response:
RWQCB Staff Name:	Title: Date:

VII. ADDITIONAL COMMENTS, DATA, ETC.

A permit has been issued for the destruction of the existing monitoring wells on-site. The permit number is LMON102347.

This document and the related CASE CLOSURE LETTER, shall be retained by the lead agency as part of the official site file.

TABLE 1 SOIL ANALYTICAL RESULTS					
Sample ID	Depth (feet)	Date	PCE (ug/kg)	TCE (ug/kg)	DCE (ug/kg)
B-1	19-20	9/98	26	ND	59
B-1A	5	2/99	17,000	--	--
B-1A	15	2/99	ND	--	--
B-1A	30	2/99	ND	--	--
B-2	1.5-2	9/98	8,500	260	67
B-2	6.5-7	9/98	3,300	210	660
B-2	16.5-17	9/98	ND	ND	ND
B-3	6.5-7	9/98	11,000	69	140
B-3	13.5-14	9/98	55,000	30	42
B-4	6.5-7	9/98	59	52	170
B-4	12-14	9/98	77	42	190
B-5	6.5-7	9/98	7,400	190	170
B-6	2	3/99	77	21	273
B-6	5	3/99	ND	ND	1,500
B-7	2	3/99	244	22	82
B-7	5	3/99	3,500	184	655
B-8	2	3/99	30.4	ND	438
B-8	5	3/99	ND	ND	403
B-9	2	3/99	ND	ND	189
B-9	5	3/99	ND	ND	1,110
B-10	2	3/99	ND	ND	228
B-10	5	3/99	4,880	98.4	2,930
B-11	2	3/99	7,400	180	185
B-11	5	3/99	10,000	230	240
B-12	2	3/99	438	115	178

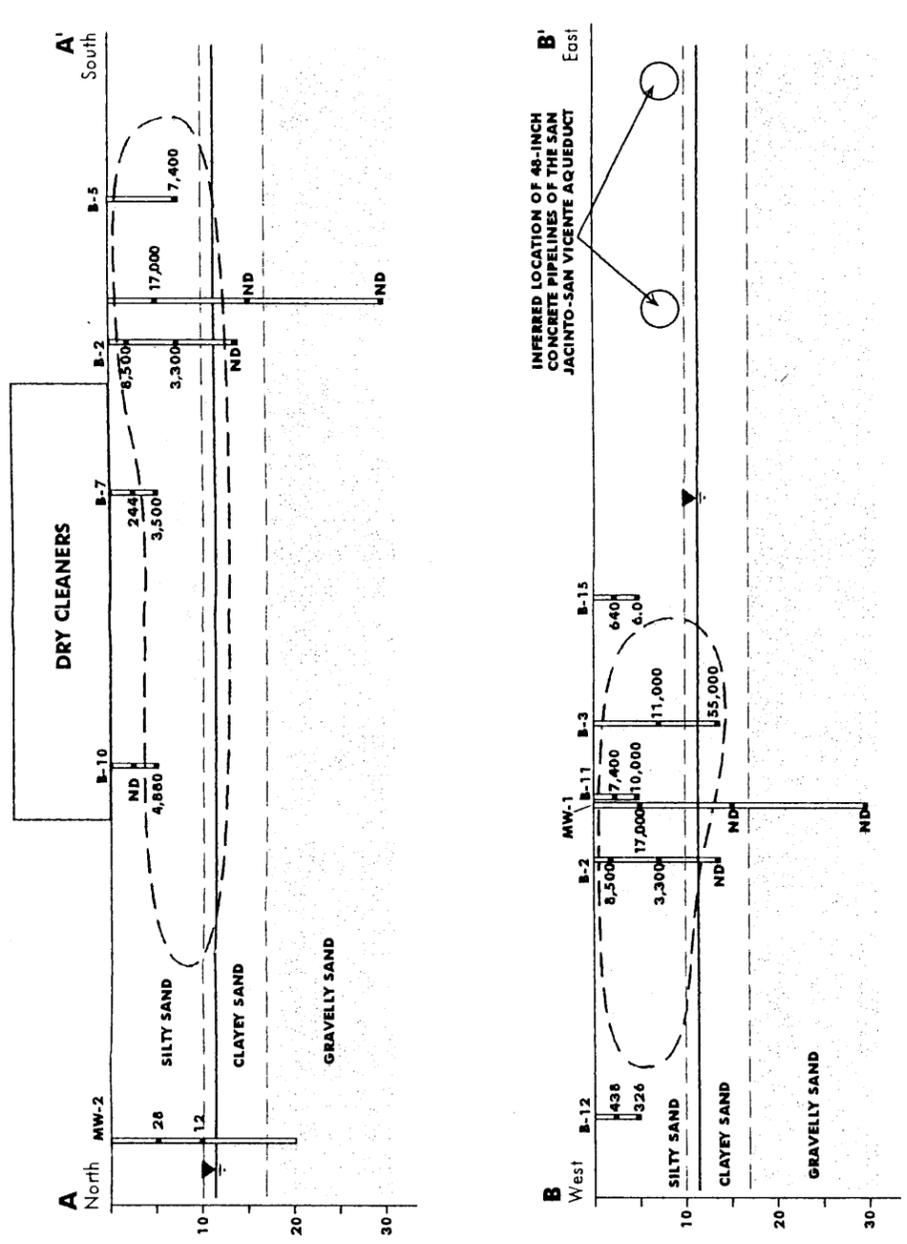
TABLE 1
SOIL ANALYTICAL RESULTS

Sample ID	Depth (feet)	Date	PCE (ug/kg)	TCE (ug/kg)	DCE (ug/kg)
B-12	5	3/99	326	54	98
B-13	2	3/99	ND	ND	ND
B-13	5	3/99	650	ND	ND
B-14	2	3/99	310	ND	ND
B-14	5	3/99	180	ND	ND
B-15	2	3/99	640	ND	ND
B-15	5	3/99	6.0	ND	ND
B-16	2	3/99	24	ND	ND
B-16	5	3/99	6.0	ND	MD
B-17 (MW2)	5	3/99	28	--	--
B-17 (MW2)	10	3/99	12	--	--
B-18 (MW3)	5	3/99	ND	--	--
B-18 (MW3)	10	3/99	ND	--	--

* - All oxygenate concentrations were below the respective laboratory detection limits

TABLE 2					
GROUNDWATER ANALYTICAL RESULTS					
Well ID	Date	Groundwater Elevation (ft)	PCE (ug/l)	TCE (ug/l)	DCE (ug/l)
MW-1	2/2/99	–	160	4.6	–
	3/22/99	664.13	368	19	10.2
	12/22/00	663.64	130	ND	ND
	7/16/03	666.37	210	7.3	ND
	1/9/04	665.70	310	6.9	ND
MW-2	3/22/99	663.48	13,700	600	3,930
	12/22/00	662.90	14,000	1,100	3,700
	7/16/03	665.61	7,400	250	1,700
	1/9/04	664.96	6,200	240	1,400
MW-3	3/22/99	663.47	2,500	150	400
	12/22/00	662.72	1,900	290	510
	7/16/03	665.31	13,000	690	2,500
	1/9/04	664.67	8,700	400	1,800
MW-4	6/22/99*	–	ND	ND	ND
	12/22/00	661.96	71	ND	11
	6/15/01	663.91	15	ND	ND
MW-5	7/16/03	672.57	18	ND	5.9
	1/9/04	661.25	11	ND	ND
<p>Sample MW-1 also contained Chloroform (5.1 ug/l) Sample MW-2 also contained Chloroform (5.4 ug/l) and trans-1,2-Dichloroethene (44 ug/l) Sample MW-3 also contained trans-1,2-Dichloroethene (56 ug/l)</p>					

CROSS SECTIONS A-A' & B-B'



EXPLANATION

- ◆ SOIL BORING LOCATION
- ⊙ GROUNDWATER MONITORING WELL LOCATION
- - - INFERRED LIMITS OF PCE-IMPACTED SOIL (1000+ ug/kg)

Note:

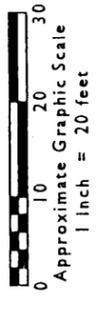
Soil analytical data are from previous site assessment operations conducted by Vertex and BPS

PIC ENVIRONMENTAL SERVICES
 742 GENEVIEVE STREET - SUITE G
 SOLANA BEACH, CA 92075

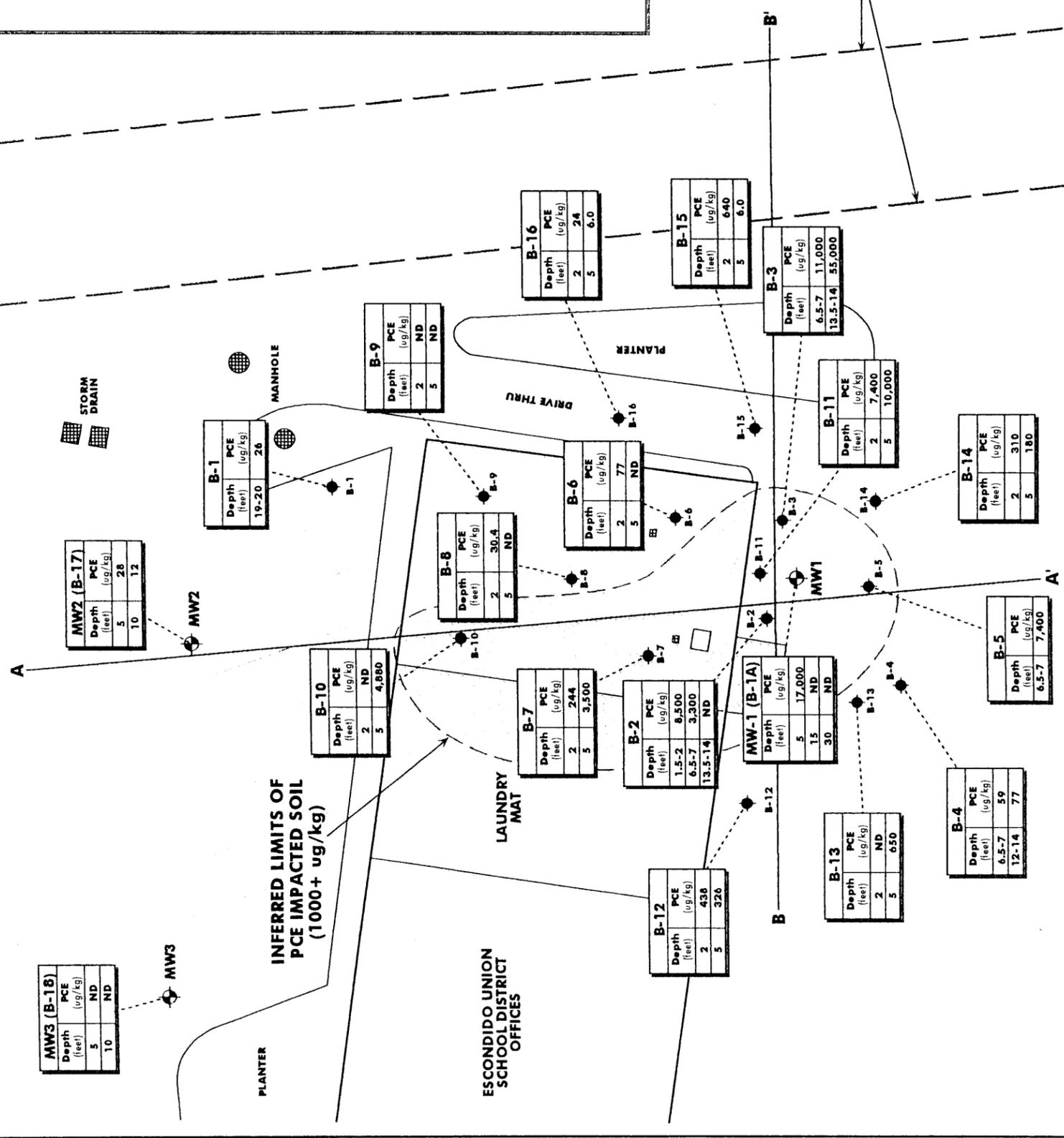
LOVETT'S 1 HOUR CLEANERS
 1378 East Grand Avenue
 Escondido, California

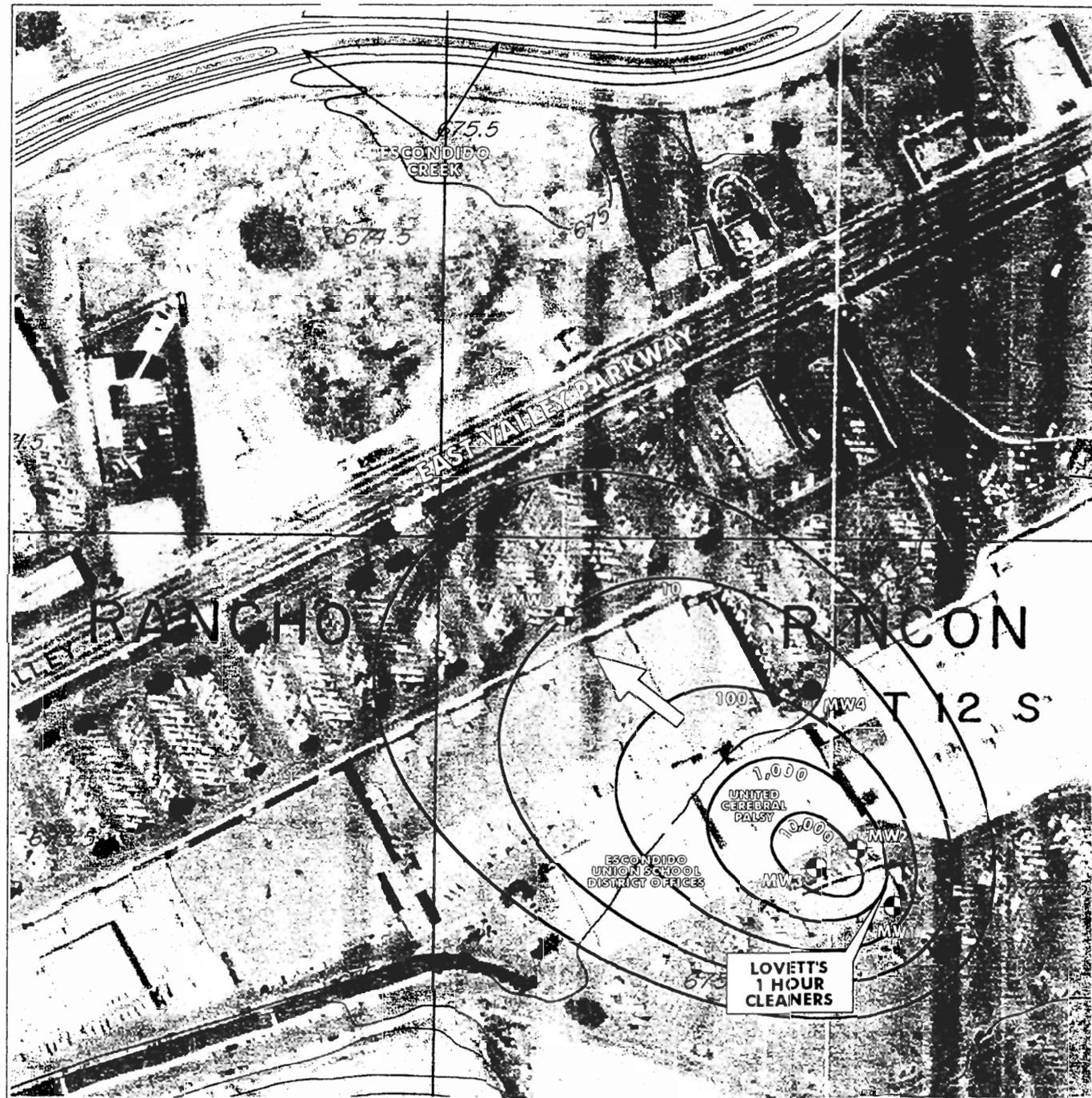
SITE PLAN SHOWING SOIL ANALYTICAL DATA

Project No: **ES7982** Date: **April 2001** Figure **3**



North

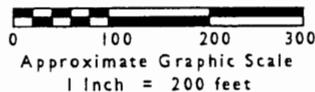




EXPLANATION

-  EXISTING GROUNDWATER MONITORING WELL LOCATION
-  ABANDONED GROUNDWATER MONITORING WELL LOCATION
-  INFERRED CONTOUR OF TOTAL VOCs CONCENTRATION IN UG/L (1/9/04)
-  INFERRED GROUNDWATER GRADIENT

Source:
 County of San Diego Topographic Survey
 Map, Sheet 350-1749, 1974



PIC Environmental SERVICES	LOVETT'S 1 HOUR CLEANERS 1378 East Grand Avenue Escondido, California	
SITE PLAN SHOWING INFERRED TOTAL VOCs CONCENTRATION CONTOURS		
Project No. ES7982	Date May 2004	Figure 1

E-12

STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

ORDER: WQ 98 - 04 UST

In the Matter of the Petition of MATTHEW WALKER

for Review of Denial of Petroleum Underground Storage Tank Site Closure at

818 Jackson Street, Napa, California.

BY THE BOARD:

Matthew Walker (petitioner) seeks review of the decision of the Napa County Department of Environmental Management (County) not to close petitioner's case involving an unauthorized release from a petroleum underground storage tank (UST) located at 818 Jackson Street, Napa, California. For the reasons set forth below, this order determines that petitioner's case should be closed and no further action related to the release should be required.

I. STATUTORY, REGULATORY, AND FACTUAL BACKGROUND

Tank owners and operators who are eligible for reimbursement from the UST Cleanup Fund can petition the Fund Manager for a review of their case if they feel the corrective action plan for their site has been satisfactorily implemented, but closure has not been granted (Health and Saf. Code, § 25299.39.2, subd. (b)). Footnote 1

Several statutory and regulatory provisions provide the State Water Resources Control Board (SWRCB), RWQCBs, and local agencies with broad authority to require responsible parties to clean up a release from a petroleum UST (e.g., Health & Saf. Code, § 25299.37; Wat. Code, § 13304, subd. (a)). The County has been designated as an agency to participate in the local oversight program for the abatement of, and oversight of the abatement of, unauthorized releases of hazardous substances from USTs. (Health & Saf. Code, § 25297.1) The SWRCB has promulgated regulations specifying corrective action requirements for petroleum UST cases (Cal. Code of Regs., tit. 23, §§ 2720-2728). The regulations define corrective action as "any activity necessary to investigate and analyze the effects of an unauthorized release, propose a cost-effective plan to adequately protect human health, safety and the environment and to restore or protect current and potential beneficial uses of water, and implement and evaluate the effectiveness of the activity(ies)." (Cal. Code Regs., tit. 23, § 2720). Corrective action consists of one or more of the following phases: (1) preliminary site investigation, (2) soil and water investigation, (3) corrective action plan implementation, and (4) verification monitoring. (Cal. Code Regs, tit. 23, § 2722, subd. (a).)

The preliminary site assessment phase includes initial site investigation, initial abatement actions, initial site characterization and any interim remedial action. (Cal. Code Regs., tit. 23, § 2723, subd. (a).) Corrective action is complete at the conclusion of the preliminary site assessment phase, unless conditions warrant a soil and water investigation. A soil and water investigation is required if any of the following conditions exists: (1) There is evidence that surface water or ground water has been or may be affected by the unauthorized release; (2) Free product is found at the site where the unauthorized release occurred or in the surrounding area; (3) There is evidence that contaminated soils are or may be in contact with surface water or ground water; or (4) The regulatory agency requests an investigation,

based on the actual or potential effects of contaminated soil or ground water on nearby surface water or ground water resources or based on the increased risk of fire or explosion. (Cal. Code Regs., tit. 23, § 2724.)

The purpose of a soil and water investigation is "to assess the nature and vertical and lateral extent of the unauthorized release and to determine a cost-effective method of cleanup." (Cal. Code of Regs., tit. 23, § 2725, subd. (a).)

SWRCB Resolution 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code section 13304 also applies to petroleum UST cases. Resolution 92-49 directs the RWQCBs to ensure that water affected by an unauthorized release attains either background water quality or the best water quality which is reasonable if background water quality cannot be restored (SWRCB Resolution 92-49, III.G). Any alternative level of water quality less stringent than background must be consistent with the maximum benefit to the people of the state, not unreasonably affect current and probable future beneficial use of affected water, and not result in water quality less than that prescribed in the water quality control plan for the basin within which the site is located (hereafter basin plan). (Ibid.)

Resolution 92-49 does not require, however, that the requisite level of water quality be met at the time of site closure. Even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable period (SWRCB Resolution 92-49, III.A).

The San Francisco Bay RWQCB Basin plan designates existing and potential beneficial uses of groundwater in the Napa Valley basin as municipal and domestic (MUN) supply, industrial supply, agricultural supply, and as freshwater replenishment to surface waters. (SFBRWQCB & SWRCB, Water Quality Control Plan, San Francisco Bay Basin (1995) at p. 2-5). The Basin plan specifies a narrative taste and odor water quality objective as follows: "Groundwaters designated for use as domestic or municipal supply (MUN) shall not contain taste- or odor-producing substances in concentrations that cause a nuisance or adversely affect beneficial uses." (Id. at p. 3-7.) The basin plan also contains the following narrative water quality objective for toxic substances as follows: "...groundwaters designated for beneficial use as domestic or municipal supply (MUN) shall not contain concentrations of constituents in excess of the maximum (MCLs)...specified in...Title 22 of the California Code of Regulations...." (Id. at 3-6.)

With regard to the water quality objective for toxicity, the State Department of Health Services (DHS) has set a maximum contaminant level (MCL) for drinking water of 1 ppb for benzene, 100 ppb for toluene, 680 ppb for ethylbenzene, and 1,750 ppb for xylene. (Cal. Code of Regs., tit. 22, § 64444.) Although DHS has not yet set an MCL for methyl-tertiary-butyl-ether (MTBE), DHS has set an interim action level of 35 ppb. (DHS Memorandum from Joseph P. Brown, Ph.D., Acting Chief, Water Toxicology Unit to Alexis M. Milea, P.E., Acting Supervisor, Standards and Technology Unit, Office of Drinking Water (February 19, 1991) at p. 2.) DHS has more recently proposed a 5 ppb MTBE concentration as a secondary drinking water standard for taste and odor. The threshold odor concentration of commercial gasoline (measured as total petroleum hydrocarbon gasoline, or TPH-g) in water is commonly accepted to be 5 ppb, with 10 ppb giving a strong odor. The threshold odor concentration of commercial diesel (measured as TPH-d) in water is commonly accepted to be 100 ppb. (SWRCB, Water Quality Criteria (2d ed. 1963) p. 230.)

The following is a brief historical summary of petitioner's site at 818 Jackson Street in the City of Napa. The site is located in an industrial and commercial area about one-half mile west/northwest of the Napa River. The two USTs at the site ceased operating some time during the 1950's. Both were reported to have had "mixed" use, storing diesel, gasoline, and motor oil. According to County inspector records

regarding the tank removal, UST #1 had a 600 gallon storage capacity and UST #2 (located in a separate area of petitioner's site approximately 100 feet south of UST #1) had a capacity of 1,100 gallons. When removed in September 1995, both USTs were described as rusted and with multiple holes, consistent with their pre-1950-vintage. According to the County inspector, the pit for UST #2 "smelled of diesel" and, during removal of the tank, a "black oily sludge" spilled into the pit. The inspector also noted an area of "obvious contamination" in the southeast corner of the pit.

The native soil immediately underlying petitioner's site consists predominantly of low permeability clay, with groundwater as shallow as about 5-6 feet below ground surface (bgs). The uppermost fine-grained deposits apparently grade into coarser materials below these depths. Groundwater monitoring wells at a nearby UST site at 1865 Tanen Street indicate shallow groundwater at similar depths and a generally southeasterly hydraulic gradient (e.g., toward the Napa River about one-half mile east-southeast of petitioner's site). No drinking water wells have been identified within about one half-mile of petitioner's site.

After removal of the two USTs, up to 40 cubic yards of petroleum-affected soil were removed to a depth of about eight feet from the two separate pits. During the tank removal, one soil sample was collected from a sidewall of the UST #1 excavation area, five soil samples were collected from the sidewalls of the UST #2 excavation area (where the diesel odor and the sludge spillage had been reported during tank removal), and a "grab" water sample was collected from each of the tank pits. One soil sample was also collected from the stockpile of excavated soils from each UST pit.

UST #1 soil and water samples both indicated "non-detect" diesel (reported as TPH-d), "non-detect" gasoline (reported as TPH-g), "non-detect" motor oil (reported as TPH-mo), and "non detect" for benzene, toluene, ethylbenzene, and xylene (BTEX). Residual petroleum hydrocarbons were detected in two of five soil samples from the sidewalls of the UST #2 excavation area. Concentrations were reported as 29 parts per million (ppm) TPH-d and 250 ppm TPH-mo (all other constituents were "non-detect") in the sample from the east wall of the pit and 1,200 ppm TPH-d (with all other constituents "non-detect") in the sample from the southeast wall, where the inspector had earlier observed "obvious contamination." Three of five soil samples (south, north, and west) were "non-detects" for all constituents. The only constituent detected in the stockpiled soil samples from each overexcavation was TPH-mo at 27 ppm and 28 ppm in UST #1 and UST #2, respectively. These stockpiled soils were disposed of at an offsite landfill.

Analysis of the "grab" water samples collected from the excavation at UST #2 indicated the following concentrations of total petroleum hydrocarbons: 94,000 ppb (TPH-d), 140,000 ppb (TPH-mo) and "non-detect" (TPH-g). In addition, the following gasoline constituents were detected: 21 ppb (benzene), 33 ppb (toluene), 110 ppb (ethylbenzene), and 156 ppb (xylene). A similar "grab" water sample from UST #1 indicated "non-detect" for all petroleum hydrocarbon constituents. Based on these results, the County requested additional soil and groundwater investigation in the area of UST #2, but no additional work in the vicinity of UST #1.

Subsequent investigations near UST #2 in July 1996 included four soil borings (B1 through B4). Six soil samples ranging from 3.0 to 6.5 feet bgs were analyzed, in addition to two "grab" groundwater samples (one from B1 and one from B3). No soil discoloration or petroleum odors were noted during drilling. All six soil samples and "grab" water samples were "non-detect" for benzene and MTBE (the primary constituents of concern) and for toluene and ethylbenzene.

Out of six soil samples recovered from the four borings, the two collected from Boring B3 (three feet and six feet bgs) had the only "hits" of TPH-d (15 ppm and 29 ppm, respectively) and TPH-g (1.1 ppm and 1.9 ppm, respectively). TPH-mo (9.5 ppm) and xylene (0.013 ppm) were detected in B3 at six feet

bgs, only. Boring B3 is located within 10 feet of the southeast pit sidewall where the County inspector had noted "obvious contamination." The only other detection of residual petroleum constituents in soil borings was at 5.5 feet bgs in B4 (about 10 feet south of the pit) which indicated 130 ppb xylene in soil (the MCL for xylene in groundwater is 1,750 ppb) with all other petroleum constituents "non-detect."

The "grab" groundwater sample collected from the open borehole in B3 (i.e., within 10 feet down-gradient of the pit) only detected the same constituents that were also detected in the soil samples for that boring (i.e., TPH-d at 8,600 ppb, TPH-g at 140 ppb, TPH-mo at 1,900 ppb, and xylene at less than one part per billion) while the "grab" groundwater sample from B1 was (like the soil samples from that boring) "non-detect" for all petroleum constituents, including benzene and MTBE.

Despite the low levels of residual petroleum constituents detected and the universal "non-detects" of the principal constituents of concern (i.e., benzene and MTBE), the County declined to classify the site as "low risk" citing reported concentrations of TPH-d, TPH-g, TPH-mo in the B-3 "grab" water sample. In a December 2, 1996 letter to petitioner, the County stated its conditions for closure as (1) a demonstration that "contamination" is of limited extent, (2) that pollutants in soil and groundwater are being treated or degraded, and (3) that the beneficial use of groundwater will be restored within a reasonable period of time. To this end, the County requested additional investigation.

On June 3, 1997, after petitioner again requested closure, County staff reiterated its opinion that the impact to groundwater from the petroleum hydrocarbon release was not adequately investigated and that additional investigation was necessary. In October 1997, petitioner requested review of his case by the UST Cleanup Fund manager pursuant to Health and Safety Code section 25299.39.2, subdivision (b). On February 5, 1998, County staff approved petitioner's request to suspend its requirements for a subsurface investigation pending the decision of the SWRCB. In a April 20, 1998 letter to the Fund manager, the County provided the record for review and restated its contention that the site is "not suitable for closure."

II. CONTENTIONS AND FINDINGS

Contention: The petitioner contends his case should be closed because the limited, localized, and diminishing impacts of residual petroleum constituents pose a "low risk" to current or probable future beneficial uses of water.

Findings: Petitioner's contention has merit. As explained below, the facts in the record support the finding that additional soil and groundwater investigation is not necessary and that residual petroleum constituents at petitioner's site do not pose a threat to human health and safety, or the environment, and do not adversely affect current or probable future beneficial uses of water. In addition, the level of site cleanup is consistent with the maximum benefit to the people of the state and will meet the applicable objectives in the San Francisco Bay RWQCB Basin Plan within a reasonable time frame.

The primary source (two USTs located about 100 feet apart which were not active for many decades prior to tank removal and overexcavation in 1995) as well as substantially affected soils from the immediate vicinity of the USTs have been removed. Residual petroleum constituents have been effectively removed, eliminated through natural attenuation processes to "non-detect" levels, or degraded to detectable but immobile concentrations adsorbed to soil. These weathered residuals have such low solubility that they are not contributing dissolved petroleum constituents to groundwater in concentrations which would impair existing or probable future beneficial use. Four soil borings installed at the County's request in the immediate vicinity of UST #2 indicate low concentrations of lingering residual petroleum (TPH-d, TPH-g, TPH-mo, and xylene) detected within about ten feet down-gradient

of the former tank pit (i.e., in B3) that diminish to "non-detect" in soil and "grab" groundwater samples within 15 feet (i.e., in B1) down-gradient of the former tank pit.

The reported presence of detectable, low level "hits" of benzene, toluene, ethylbenzene, and xylene in the "grab" groundwater sample from the UST #2 pit appears to reflect adsorbed chemicals mobilized from disturbed suspended sediments which were introduced during overexcavation of the pit. Because these samples were "grabbed" from a highly disturbed, suspended-sediment-rich environment of an excavated pit they cannot be relied upon as quantitative indicators of ambient, dissolved groundwater quality. Although laboratory analyses of such "grab" water samples certainly include any dissolved constituents (if present) in the reported total, they will also include constituents adsorbed to soil particles dislodged from surrounding soils that are not representative of the underlying water-bearing zone under ambient, undisturbed conditions. At best, such "grab" samples can provide evidence of the absence of constituents (either dissolved or adsorbed to suspended sediments) or a qualitative indication that constituents are present in the sample, although not necessarily dissolved in ambient groundwater. Such analyses can be overwhelmed by the presence of even minute quantities of adsorbed concentrations loosened from the excavation sidewalls of the pit (or boring) even when dissolved concentrations in groundwater are truly "non-detect." In these instances, soil samples analyses will give the best quantitative picture of the magnitude and extent of the release while "grab" water samples will, at best, provide a simple qualitative indicator of the presence or absence of petroleum constituents at a particular location.

Of the five soil samples taken from the soils immediately surrounding the UST #2 excavated area, none detected benzene, toluene, ethylbenzene, or xylene. The only constituents detected (TPH-d, TPH-g, and TPH-mo) indicated very old, highly attenuated, immobile residual petroleum adsorbed to soil. The "grab" groundwater sample from this pit was the only sample at the site that detected benzene (29 ppb). None of the four borings in the immediate vicinity of this pit, including B3 and B1, which are within 10 feet and 15 feet down-gradient of the pit, detected benzene, toluene, or ethylbenzene (the most soluble and mobile petroleum hydrocarbons of concern). These facts indicate a very localized area of impacted soils and well-advanced degradation of immobile residual petroleum constituents which is consistent with a 1950's release.

The County contends that the extent of contamination has not been defined and that the stability of the presumed groundwater plume has not been demonstrated. We disagree. The soil borings and "grab" water samples provide sufficient information to conclude that (1) there is no "contamination" (e.g., "an impairment of the quality of the waters of the state . . . to a degree which creates a hazard to the public health" as defined in Wat. Code, § 13050, subd. (k)), and (2) there is no dissolved "plume" to define and the extent of soil affected by immobile residuals has been shown to be localized within just a few feet east and southeast of former UST #2.

Furthermore, MTBE was not found in any of the six soil boring samples or in the two "grab" groundwater samples collected from borings within 10-15 feet down-gradient of former UST #2. These findings, too, are consistent with the 1950's operation of the tanks.

The absence of detectable benzene, toluene, ethylbenzene, or xylene from all samples except one "grab" groundwater sample from the pit, which included disturbed soil from the east and southeast sidewalls (which had detectable concentrations of TPH-d and TPH-mo) provides substantial evidence of very limited, very localized soil impacts from a very old release of petroleum. The "grab" groundwater sample did not measure ambient, dissolved groundwater quality, but rather reflected contribution from the limited, localized residual petroleum constituents adsorbed to soils exposed during excavation. (It should be noted that even assuming no contribution from detectable petroleum constituents adsorbed to soils, the reported concentrations of toluene, ethylbenzene, and xylene in "water" were all less than their

respective MCL.) Evidence that detectable, residual petroleum constituents are limited to the immediate vicinity of the former UST (and that petitioner's case should be, for all practical purposes, considered one of localized impact to a limited volume of petroleum-affected soil) is also strengthened by the fact that in boring B1 (15 feet down-gradient of the former UST #2) all petroleum constituents are "non-detect" in both soil and "grab" groundwater samples.

Thus, the available facts indicate the absence of a "dissolved" plume of soluble, mobile constituents and do not support the County's request for additional groundwater investigation to determine plume extent. The facts in the record indicate that with no further regulatory action, residual detectable concentrations of TPH-g, TPH-d, TPH-mo, and xylene adsorbed to shallow, fine-grained soils will remain localized and continue to attenuate naturally over time.

The lingering, but diminishing residual concentrations of petroleum constituents will not affect beneficial uses of groundwater. According to Department of Water Resources well records and 1990 Census data, there are no drinking water wells within 2,500 feet of petitioner's site. The nearest is a domestic well installed more than thirty years ago at 2217 Soscol Avenue, about 2,500 feet to the north. This well encountered the first water-bearing zone at depth of 43 feet, is screened from 30-85 feet bgs and has a surface sanitary seal to 30 feet bgs. Drilling logs further indicate that groundwater produced in this well was first encountered at a depth of 43 feet but rose to 7 feet bgs, which indicates confined conditions that preclude significant recharge from shallower groundwater such as encountered at petitioner's site at six feet bgs. Nevertheless, concentrations of TPH-g in that shallow groundwater in immediate contact with (albeit limited) residual TPH-g adsorbed to soils will likely remain above 5 ppb (the commonly accepted odor threshold for water, which is more stringent than the 100 ppb threshold for TPH-d) in a localized volume of surrounding groundwater for a significant period of time. Considering the absence of existing wells in close proximity to petitioner's site, the local hydrogeologic considerations, and standard well construction practices, such a limited, isolated scenario will not unreasonably affect existing or probable future beneficial uses.

To remove all traces of residual petroleum constituents at petitioner's site would require additional, but feasible, excavation of soil between the former southeast corner of the UST#2 pit and the "non-detect" boring B1, about 15 feet away and perhaps to a depth of 6-8 feet. Removal of 50 cubic yards or less would eliminate residual, detectable petroleum concentrations. However, if complete removal of detectable traces of petroleum constituents becomes the standard for UST corrective actions, the statewide technical and economic implications will be enormous. For example, disposal of soils from comparable areas of excavation throughout the state would greatly impact already limited landfill space. In light of the precedent that would be set by requiring additional excavation at this site and the fact that beneficial uses are not threatened, attaining background water quality at petitioner's site is not feasible. It is impossible to determine the precise level of water quality that will be attained given the limited residual TPH-g that remains at the site, but in light of all the factors discussed above, a level of water quality will be attained that is consistent with the maximum benefit to the people of the state. Footnote2

The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate for this site requires a determination that the alternative level of water quality will not result in water quality less than that prescribed in the relevant basin plan. Pursuant to SWRCB Resolution 92-49, a site may be closed if the basin plan requirements will be met within a reasonable time frame.

In the instant case, as discussed above, TPH-g in the shallow groundwater in immediate contact with the limited residual TPH-g adsorbed to soils will likely remain above 5 ppb (the commonly accepted odor threshold for water) and thus violate the basin plan's narrative odor objective in a localized volume of surrounding groundwater for a significant period of time. This time period could be anywhere from a

couple of decades to hundreds of years.

Nonetheless, during this time these residual concentrations above 5 ppb TPH-g will not pose a threat to current or future beneficial uses. It is highly unlikely that TPH-g detected in localized areas in the immediate area of the UST's discharge will migrate substantially beyond current limited spatial extent. Though the longer chain hydrocarbons comprising TPH-g biodegrade more slowly than certain petroleum constituents, such as benzene, they are also more recalcitrant (i.e., less volatile, less soluble and highly absorbent) and much less mobile. It is also highly unlikely that this particular very limited pocket of shallow groundwater will be used directly as a source of drinking water. Thus, the significant period of time that it will take for water quality in this limited area to meet all Basin Plan objectives is a reasonable time frame. Closure of the site, given the facts in this particular case, is appropriate.

III. SUMMARY AND CONCLUSION

1. There is no evidence of MTBE at this site. Residual concentrations of petroleum hydrocarbons at petitioner's site have degraded to detectable but immobile concentrations strongly adsorbed to fine-grained soil particles in contact with shallow groundwater. This limited volume of soil is localized within a few feet immediately east and southeast of the location of one of the former USTs.
2. Petitioner's site is located in an industrial and commercial area. According to drilling logs, the nearest well (about 2,500 feet to the north) has a surface sanitary seal to 30 feet bgs and is screened from 30-85 feet bgs in a confined groundwater bearing zone. These data indicate that shallower groundwater such as that observed at petitioner's site is effectively precluded from adversely affecting the deeper, confined groundwater zone.
3. Given the low permeability and shallowness of the affected water-bearing soils at petitioner's site and the standard practice of installing surface sanitary seals to depths of 30 feet or more in water supply wells, the residual, detectable concentrations of highly weathered petroleum hydrocarbons do not pose a threat to human health and safety, or the environment, and do not adversely affect current or probable future beneficial uses of water.
4. Additional soil and water investigation at petitioner's site is not necessary.
5. The level of site cleanup is consistent with the maximum benefit to the people of the state.
6. Given the adverse technical and economic implications statewide if further corrective action was required, and the minimal benefits, if any, that would be gained by further corrective action, it is not feasible to attain background water quality at petitioner's site.
7. Detectable TPH-g in shallow groundwater in immediate contact with the limited, weathered residual TPH-g adsorbed to soil particles will likely remain above 5 ppb (the commonly accepted odor threshold for drinking water) and thus violate the basin plan's narrative odor objective in a very localized, small volume of surrounding groundwater for anywhere from decades to hundreds of years.
8. The determination as to what constitutes a reasonable period must be based on evaluation of all relevant factors, including but not limited to the extent and gravity of any threat to public health and the environment during the period required to meet basin plan objectives. Although the time required to attain objectives in this case is lengthy, it is a reasonable period considering the facts of this particular case, including that there are no known drinking wells within 2,500 feet of the site, it is highly unlikely that TPH-g detected in localized areas in the immediate area of the UST's discharge will migrate

substantially beyond the current limited spatial extent, it is highly unlikely that this particular very limited pocket of shallow groundwater will be used directly as a source of drinking water, and that even if the affected groundwater were used as a source of drinking water the TPH-g in that water would not pose any threat to public health.

9. Therefore, no further corrective action is necessary.

10. The above conclusions are based on the site-specific information relative to this particular case.

IV. ORDER

IT IS THEREFORE ORDERED that petitioner's case be closed, and no further action related to the release be required. The UST Cleanup Fund Manager is directed to issue petitioner a uniform closure letter pursuant to Health and Safety Code section 25299.37, subdivision (h).

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on August 26, 1998.

AYE: Mary Jane Forster

James M. Stubchaer

John W. Brown

John P. Caffrey

NO: Mark Del Piero

ABSENT: None

ABSTAIN: None

/s/

Maureen Marché

Administrative Assistant to the Board

Footnote1

To the extent that the SWRCB may lack authority to review this petition pursuant to Health and Safety Code section 25299.39.2, subdivision (b) because the petitioner did not submit a corrective action plan for the site, the petition is being reviewed on the SWRCB's own motion pursuant to Health and Safety Code section 25297.1, subdivision (d) and SWRCB Resolution 88-23.

Footnote2

In approving an alternative level of water quality less stringent than background, the SWRCB has also considered the factors contained in California Code of Regulations, title 23, section 2550.4, subdivision (d). As discussed earlier, the adverse effect on shallow groundwater will be minimal and localized, and there will be no adverse effect on the groundwater contained in deeper aquifers, given the physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the site and surrounding land; and the quantity of the groundwater and direction of the groundwater flow. In addition, the potential for adverse effects on beneficial uses of groundwater is low, in light of the proximity of groundwater supply wells; the current and potential future uses of groundwater in the area; the existing quality of groundwater; the potential for health risks caused by human exposure; the potential damage to wildlife, crops, vegetation, and physical structures; and the persistence and permanence of potential effects.

Finally, a level of water quality less stringent than background is unlikely to have any impact on surface water quality, in light of the volume and physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the site and surrounding land; the quantity and quality of groundwater and the direction of groundwater flow; the patterns of precipitation in the region, and the proximity of residual petroleum to surface waters.

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WQ 2004-0018-UST

In the Matter of the Petition of
ERNEST PANOSIAN
Review of Denial of
Petroleum Underground Storage Tank Site Closure
5680 Hollister Avenue, Goleta, California.

BY THE BOARD:

Ernest Panosian (Petitioner) seeks review of the decision of the Santa Barbara County (County) Local Oversight Program (LOP), which did not grant site closure based on the Central Coast Regional Water Quality Control Board's (CCRWQCB) refusal to concur with the case closure recommendation made by the County regarding Petitioner's case involving an unauthorized release from petroleum underground storage tanks (USTs) located at 5680 Hollister Avenue, Goleta, California. For the reasons set forth below, this order determines that Petitioner's case should be closed and no further action related to the former UST release(s) should be required.¹ This Order addresses residual petroleum hydrocarbons on Petitioner's site, regardless of their origin, and does not address effects of oxygenates that have encroached onto Petitioner's site from the upgradient releases.

¹ The scope of this site closure is limited by a complicating factor. As will be explained in the Order, there is a more recent unauthorized release at an adjacent site (World Oil). MTBE emanating from the World Oil site has impacted groundwater that underlies Petitioner's site and while it is unlikely, Petitioner could be called upon to address the MTBE or any other constituents that may migrate in the future onto his site from the World Oil site (SWRCB WQ Order 86-2 (*Zoecon Corporation*)). It is our understanding that World Oil is currently in compliance with cleanup directives issued for the World Oil site.

STATUTORY & REGULATORY BACKGROUND

Tank owners or operators or other responsible parties can petition the State Water Resources Control Board (SWRCB) for a review of their case if they feel the corrective action plan for their site has been satisfactorily implemented, but closure has not been granted (Health and Saf. Code, §25296.40, subdivision (a)(1)). The SWRCB has adopted regulations that govern the site closure petition process (See California Code of Regulations, Title 23, Chapter 18, Article 6).

Several statutory and regulatory provisions provide the SWRCB, Regional Water Quality Control Boards (RWQCBs), and local agencies with broad authority to require responsible parties to clean up a release from a petroleum UST (e.g., Health & Saf. Code, §25296.10; Wat. Code, §13304, subd. (a)). The SWRCB has promulgated regulations specifying corrective action requirements for petroleum UST cases (Cal. Code of Regs., tit. 23, §§2720-2728). The regulations define corrective action as “any activity necessary to investigate and analyze the effects of an unauthorized release, propose a cost-effective plan to adequately protect human health, safety and the environment and to restore or protect current and potential beneficial uses of water, and implement and evaluate the effectiveness of the activity(ies).” (Cal. Code Regs., tit. 23, §2720). Corrective action consists of one or more of the following phases: (1) preliminary site investigation, (2) soil and water investigation, (3) corrective action plan implementation, and (4) verification monitoring (Cal. Code Regs, tit. 23, §2722, subd. (a)).

The preliminary site assessment phase includes initial site investigation, initial abatement actions, initial site characterization and any interim remedial action (Cal. Code Regs., tit. 23, §2723, subd. (a)). Corrective action is complete at the conclusion of the preliminary site assessment phase unless conditions warrant a soil and water investigation. A soil and water investigation is required if any of the following conditions exist: (1) There is evidence that surface water or groundwater has been or may be affected by the unauthorized release; (2) Free product is found at the site where the unauthorized release occurred or in the surrounding area; (3) There is evidence that contaminated soils are or may be in contact with surface water or groundwater; or (4) The regulatory agency requests an investigation, based on the actual or potential effects of contaminated soil or groundwater on nearby surface water or groundwater resources or based on the increased risk of fire or explosion (Cal. Code Regs., tit. 23, §2724).

The purpose of a soil and water investigation is "to assess the nature and vertical and lateral extent of the unauthorized release and to determine a cost-effective method of cleanup." (Cal. Code of Regs., tit. 23, §2725, subd. (a)).

SWRCB Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code §13304* also applies to petroleum UST cases. Resolution No. 92-49 directs that water affected by an unauthorized release attain either background water quality or the best water quality that is reasonable if background water quality cannot be restored (SWRCB Resolution No. 92-49, Section III.G). Any alternative level of water quality less stringent than background must be consistent with the maximum benefit to the people of the state, not unreasonably affect current and anticipated beneficial use of affected water, and not result in water quality less than that prescribed in the water quality control plan for the basin within which the site is located. (*Ibid.*)

Resolution No. 92-49 does not require, however, that the requisite level of water quality be met at the time of site closure. Resolution 92-49 specifies compliance with cleanup goals and objectives within a reasonable time frame (*Id.* at section III.A). Therefore, even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable period (*Id.* at section III.A).

The CCRWQCB Basin Plan (Basin Plan) designates existing and potential beneficial uses of groundwater in the Goleta Hydrologic Subarea as municipal supply (MUN), industrial supply (IND), and agricultural supply (AGR) (CCRWQCB & SWRCB, Water Quality Control Plan, 1994 at p. II-1. The Basin Plan specifies a narrative taste and odor water quality objective as follows: "Ground waters shall not contain taste or odor-producing substances in concentrations that adversely affect beneficial uses." (*Id.* at p. III-14). In addition, the CCRWQCB Basin Plan specifies that ground waters designated as AGR "shall not contain concentrations of chemical constituents in amounts which affect the agricultural beneficial use" (*Id.* at p. III-5).

The Basin Plan also contains the following narrative MUN water quality objective for organic chemicals: "Groundwaters shall not contain concentrations of organic chemicals in excess of the limiting concentrations set forth in California Code of Regulations, Title 22." (*Id.* at III-14). With regard to municipal water quality objectives (WQOs) for chemical constituents, the State Department of Health Services (DHS) has set maximum contaminant levels (MCLs) for

drinking water of 13 parts per billion (ppb) for methyl tertiary butyl ether (MTBE), 1 ppb for benzene, 150 ppb for toluene, 700 ppb for ethylbenzene, 1,750 ppb for xylene, and 0.5 ppb for 1,2-dichloroethane (EDC) (Cal. Code of Regs., tit. 22, §64444). EDC is a gasoline additive historically used as a lead scavenger in leaded gasoline. EDC concentrations detected in groundwater at the site are a remnant of leaded gasoline. The threshold odor concentration of commercial gasoline (measured as total petroleum hydrocarbon gasoline, or TPH_g) in water is commonly accepted to be 5 ppb, with 10 ppb giving a strong odor. The secondary MCL for MTBE is 5 ppb.

The SWRCB's LOP provides for local agency oversight of the abatement of unauthorized releases from USTs. In implementing the LOP, the SWRCB is authorized to enter into contracts with local agencies to oversee site cleanup of unauthorized releases. (Health & Saf. Code, § 25297.1, subd. (b).) The County has a contract with the SWRCB and is participating in the LOP. The LOP contract requires the County, when proposing site closure, to submit a completed case closure summary to CCRWQCB staff for concurrence. While the contract only requires staff level concurrence, cases in the CCRWQCB jurisdiction where WQOs are exceeded are routinely submitted to the CCRWQCB for their concurrence as well.

SITE BACKGROUND

The Petitioner's site is located at the corner of Hollister and Kinman Avenues in Goleta, California. The site is currently used as an automobile dealership. Highway 101 is located about 0.33 miles to the north, and the Pacific Ocean is located about 1.25 miles to the south. A retail gasoline outlet owned by World Oil is located immediately to the east across Kinman Avenue (see attached site map). Residential apartment units are located approximately 65 feet north of Petitioner's site, and light commercial businesses are located to the east and west. Three gasoline USTs (one-6,000 and two-4,000 gallon) and one 250-gallon waste oil UST were installed at the site in 1961. Atlantic Richfield operated the USTs from 1961-1973. Petitioner purchased the property in 1973 and leased it to an auto repair shop until 1978. Avis Rent-A-Car operated one of the USTs (6,000 gallon) from 1979-1988. The USTs and associated piping passed leak detection testing during Avis's operation of the UST. The remaining USTs have

reportedly not been used since 1973. Releases from two onsite locations are evident, one at the USTs and the other at the west end of the dispenser island.

In 1989, prior to removal of all USTs, a preliminary site assessment included 6 shallow borings (less than six feet deep), analysis of 20 soil samples, the installation of three temporary groundwater monitor wells at the tank pit location, and the collection and analyses of three groundwater samples. The analyses of the groundwater samples from the temporary monitor wells revealed maximum concentrations of dissolved phase benzene, toluene, ethylbenzene, xylenes (BTEX) and EDC of 11,000 ppb, 2,200 ppb, 170 ppb, 1,200 ppb, <5 ppb, respectively. Dissolved TPH_g was detected at 41,000 ppb.

The USTs were removed in 1991 and an unreported quantity of contaminated soil was excavated and disposed. Soil samples were collected beneath each of the three gasoline USTs upon removal. BTEX and TPH_g were not detected in soil beneath two of the gasoline USTs. Beneath the third gasoline UST, only toluene, xylene and TPH_g were detected in soil, at 0.140 ppm, 2.54 ppm and 7.4 ppm, respectively. A second release appears to have been localized in soil at the west end of the former dispenser island. BTEX and TPH_g were detected in soil from 2.5 to 5.5 feet below ground surface (bgs) at concentrations of 1.7 ppm, 7.5 ppm, < 0.66 ppm, 20 ppm and 2,500 ppm.

From 1989-1995, Petitioner drilled a total of 21 soil borings and installed a total of 10 monitor wells. The wells established a west-northwest general direction of groundwater flow in the shallow aquifer. In June 1991, Petitioner installed the first four monitor wells with screened intervals from 12-35 feet bgs. Monitor well MW-1 is located adjacent to the dispenser island, MW-2 and MW-3 are located at and adjacent to the former UST pit, and MW-4 in the vicinity of the associated piping. Initial groundwater sample analyses indicated weathered gasoline in groundwater at the locations of all four wells. Maximum concentrations of BTEX and EDC were 730 ppb, 3 ppb, 57 ppb, 200 ppb, 50 ppb, respectively, and dissolved TPH_g was 2,100 ppb.

In September 1991, the County directed Petitioner to further define the lateral extent of groundwater contamination. In response, monitor well MW-5 was installed 90 feet in the downgradient direction from the former UST area in January 1992. Results of the initial groundwater analysis from this well showed BTEX and EDC detections at 75 ppb, 6 ppb, 47 ppb, 300 ppb, 10 ppb, respectively, and TPH_g at 1,400 ppb. In April 1992, the County directed delineation of affected groundwater north, south and west of the former dispenser island area. In

response, monitor wells MW-6, MW-7 and MW-8 were installed in the downgradient/crossgradient direction of the former UST area in July 1992. Analyses of groundwater samples from MW-6 indicated BTEX were not detected (all <0.5 ppb), EDC was 11 ppb, and TPH_g was 70 ppb. BTEX and EDC at 2 ppb, <0.5 ppb, <0.5 ppb, 1 ppb, 1 ppb, respectively, and TPH_g at 100 ppb were detected in the sample from well MW-7 and 5 ppb, <0.5 ppb, 22 ppb, 13 ppb, 9 ppb, respectively, and TPH_g at 700 ppb in the sample from MW-8.

In March 1993, the County concurred with Petitioner that downgradient delineation of affected groundwater was complete, but directed additional wells north and south of the former dispenser island area, and allowed a reduction in sampling frequency from quarterly to semi-annually in the non-perimeter wells (MW-1, MW-2 and MW-5). In June 1993, Petitioner installed well MW-9 north of the dispenser island area. Analysis of the initial groundwater sample collected from well MW-9 indicated concentrations of BTEX and EDC at <0.5 ppb, <0.5 ppb, 1 ppb, 5 ppb, 3 ppb and TPH_g at 270 ppb. Petitioner prepared a workplan in November 1994 to install well MW-10 south of the dispenser island. Petitioner proposed to the County that well MW-10 be used to delineate the southern extent of contamination associated with the property. The County approved the workplan and accepted wells MW-9 and MW-10 as perimeter delineation points in their workplan approval letter. In March 1995, Petitioner installed well MW-10 south of the former dispenser island area. Groundwater sample analysis indicated BTEX and EDC at <0.5 ppb, and TPH_g at <50 ppb in MW-10.

In April 1997, the County allowed a reduction in groundwater sampling frequency from quarterly to semi-annually in all monitor wells. Petitioner began to analyze groundwater samples for MTBE in April 1997. MTBE was initially detected in wells MW-2, MW-3, MW-7, MW-9 and MW-10 at 450 ppb, 3,900 ppb, 4 ppb, 1 ppb and 54 ppb, respectively. A subsequent forensic study conducted by the Petitioner concluded that MTBE on Petitioner's site originated from the upgradient World Oil facility. In a letter dated February 15, 2002, the County acknowledged that all of the MTBE was from the upgradient World Oil site and unrelated to Petitioner's site. Subsequently, petitioner ceased MTBE analysis. Other gasoline constituents in addition to MTBE may have migrated from the World Oil facility in the westerly direction onto Petitioner's site.

Groundwater sampling in March 2004 showed maximum BTEX, EDC and TPH_g concentrations of 150 ppb, 2ppb, 93 ppb, 28 ppb, 5 ppb and 2,900 ppb in the vicinity of the

former UST pit from MW-2 and MW-3. Concentrations of BTEX and EDC in MW-6, which is located approximately 120 feet downgradient of the former UST pit, are all <0.5 ppb, and TPH_g was 320 ppb. Except for TPH_g, WQOs for all other Constituents of Concern are met 120 feet downgradient of the former UST pit.

There is an active drinking water supply well that is located approximately 500 feet east of the site and is upgradient from the groundwater impacted by the release from Petitioner's USTs. This well has a 50-foot annular seal and is screened from 245-310 feet bgs in the main aquifer below the regional aquitard.

CLOSURE DENIAL

In July 2000, Petitioner requested no further action (i.e. site closure) from the County on the basis that the dissolved-phase petroleum hydrocarbons in groundwater are adequately defined, do not need active remediation and represent a low-risk to the public. In a response dated July 2001, the County denied the closure request. Petitioner appealed for site closure to the SWRCB on March 2, 2002. A SWRCB Workshop item recommending closure was prepared for the July 2, 2002 Workshop. However the Petitioner asked that the item be withdrawn from the Workshop. SWRCB, CCRWQCB and County staff worked cooperatively to resolve the petition informally. As a result of several meetings and discussions, County and the CCRWQCB staff agreed that the case should be taken to the CCRWQCB with a recommendation for closure. Subsequently, CCRWQCB staff prepared a staff report to recommend closure during their regular CCRWQCB meeting held on September 10, 2004. During that meeting, the CCRWQCB unanimously objected to the recommendation for closure on the basis that beneficial uses would not be protected if the site is closed at current residual petroleum concentrations.

HYDROGEOLOGIC SETTING

The site lies approximately 30 feet above mean sea level in the southern portion of the North-Central Goleta Basin.²

² Geology and Ground Water Resources of the South-Coast Basins of Santa Barbara County, Water Supply Paper 1108, U.S. Geological Survey, 1951.

The Goleta Water District maintains 11 municipal water wells in the City. The closest municipal well is located approximately 3,800 feet southeast of the site.

The North-Central Goleta Basin was adjudicated in 1989 through a ruling known as the "Wright Judgement."³ Since that time, the basin has not been fully utilized for municipal drinking water purposes as most of the City's current drinking water is supplied from Lake Cachuma, which receives State Water Project water.

Native soil underlying Petitioner's site consists predominantly of sand, silt, and silty clay to the maximum depth investigated of 35 feet bgs. Sand was initially encountered in borings, which became increasingly silty and clayey with depth. A low permeable silty clayey stratum was encountered from about 15 to 22 feet bgs. Another low permeable stratum appears to begin at about 35 feet bgs and extends to about 130 feet bgs based on the log of the nearby domestic well.

Shallow groundwater, encountered at 15 to 20 feet bgs, flows toward the west-northwest with a hydraulic gradient of about 0.03 ft/ft at the site. Over the past 13 years, the hydraulic head increased approximately 5 feet.

In the vicinity of the site, shallow groundwater is hydraulically separated from deeper, artesian groundwater present at depths of about 130 to 170 feet by a regional aquitard. As reported by the Santa Barbara County Public Works Department:

"Near-surface low permeability sediments cause the southern portion of the North-Central and West basins to be under confined conditions and provide a barrier to contamination from potential surface sources of water quality degradation such as agricultural return flow or infiltration of brackish water in the overlying Goleta Slough. High TDS perched water is present in shallow aquifers above the confining layers. This water is not in

³ Santa Barbara County Water Agency, Water Resources of Santa Barbara County, July 2000, p. 23: "Available storage of the North/Central Basin is estimated to be 18,000 AF. Safe yield of this basin is estimated to be 3,600 AFY. Historically, this basin was in a state of severe overdraft. This state of overdraft resulted in lengthy legal proceedings and a long-term moratorium on new water connections to the Goleta Water District (GWD). The Wright Judgement in 1989 served to adjudicate the water resources of this basin and assigned quantities of the basin Safe yield to various parties, including the GWD. The judgement also ordered the GWD to bring the North/Central Basin into a state of hydrologic balance by 1998. The GWD has achieved compliance with this order through the importation of State Water Project water and the development of other supplemental supplies. These supplemental supplies have offset the court-mandated reduction in pumpage from the basin. Given that the basin has been adjudicated and pumpage is controlled by the Court, overdraft is not foreseeable in the North-Central Basin".

general use. Water quality in the North-Central Basin is sufficient for many agricultural uses but might require treatment for domestic uses.”⁴

CONCEPTUAL MODEL OF THE RELEASE

Based on analysis of monitor well data and boring logs, the following conceptual model for the release is presented: As gasoline was released and moved down through sandy sediments, it encountered a relatively low permeable silty clayey stratum present at a depth of approximately 15 feet to about 22 feet bgs. Gasoline spread laterally along this fine-grained unit sorbing into it. Soil data indicate that the bulk of residual gasoline mass remaining at the site is contained in this unit, that the volatile components of the gasoline are nearly depleted, and that the remaining gasoline is considerably aged and weathered.

A shallow water-bearing zone occurs below the fine-grained unit, to a depth of about 35 feet bgs, and consists of interbedded sand and silt. Monitor wells constructed at the site were completed with 20-foot screened intervals to depths of 32 to 35 feet bgs. As the hydraulic head increased from approximately 20 feet to 15 feet over the last 13 years, groundwater came into intimate contact with the adsorbed phase petroleum hydrocarbons via the well screens that extended into and through the fine-grained unit. Concentration trends in groundwater samples indicate that biodegradation is active.

CONTENTIONS AND FINDINGS

Contention: The Petitioner contends that site closure above MCLs is protective of existing and potential beneficial uses. The CCRWQCB is concerned that beneficial uses will not be protected if the site is closed at current concentrations. Although toluene, ethylbenzene and xylene concentrations have already reached WQOs, concentrations of benzene (150 ppb) and EDC (5 ppb) exceed their respective WQOs.

Response: The CCRWQCB staff’s recommendation for closure as outlined in their August 17, 2004 staff report is based on the following:

⁴ Santa Barbara County Groundwater Report, Santa Barbara County Water Resources Department, Water Agency Division, 2000, p. 19.

- (1) Concentrations of petroleum hydrocarbons have decreased in the last 13 years of monitoring,
- (2) The spatial extent of residual benzene in shallow groundwater is limited and does not pose a threat to potential receptors,
- (3) Low concentrations of EDC (less than 6 ppb) do not pose a significant water quality concern considering site conditions, limited nearby wells, and contamination extent,
- (4) Residual petroleum hydrocarbons in shallow groundwater are unlikely to impact the private, domestic water well located approximately 500 feet away,
- (5) Residual petroleum hydrocarbons dissolved in shallow groundwater and adsorbed to soil are localized and limited in extent and will continue to attenuate naturally over time,
- (6) It is highly unlikely that the shallow affected groundwater will be used directly as a source of drinking water,
- (7) In the unlikely event that a domestic supply well were to be installed at the subject site, the deep production aquifer would be protected by a clay aquitard and the well's sanitary seal,
- (8) Case closure is consistent with SWRCB Resolution No. 92-49, wherein the affected water will not affect current and anticipated beneficial uses.

These findings were consistent with the County's approval of site closure. We agree with the County and CCRWQCB staff's technical determinations and conclusions, and disagree with the CCRWQCB's conclusion that beneficial uses will not be protected if the site is closed at current residual petroleum concentrations. SWRCB Resolution No. 92-49 does not require that WQOs be met at the time of closure or even within a few quarters subsequent to closure. Rather, Resolution 92-49 directs compliance with cleanup goals and objectives within a reasonable time period.

With no further regulatory action, residual detectable concentrations of benzene, EDC and TPH_g present in shallow groundwater and adsorbed to shallow soils are (and will remain) limited to the immediate vicinity of the site and will continue to attenuate naturally over time with no further corrective action.⁵ Given the demonstrated, ongoing natural attenuation of residual BTEX and EDC to date, it is likely that MCLs will be met for benzene, EDC and the

⁵ We note that the CCRWQCB is objecting to site closure because WQOs are exceeded for benzene and EDC. Since the taste and odor threshold is exceeded for TPH_g, we consider TPH_g as well as benzene and EDC under our analysis under SWRCB Resolution No. 92-49.

narrative taste and odor objective will be met for TPH_g within years to decades. Concentrations of toluene, ethylbenzene and xylenes are currently below MCLs. Concentrations of TPH_g in shallow groundwater in immediate contact with (albeit limited) residual TPH_g adsorbed to soils may remain above 5 ppb (the commonly accepted odor threshold for water) for a longer period of time than individual petroleum hydrocarbon constituents such as benzene. However, considering the absence of active wells close to Petitioner's site, the local hydrogeologic considerations, and standard well construction practices that mandate surface sanitary seals to preclude introduction of shallow groundwater such as that encountered at Petitioner's site, the limited, isolated scenario will not unreasonably affect existing or anticipated future beneficial uses.

To remove all traces of residual petroleum constituents at Petitioner's site in the short-term would require additional excavation of soil at the site to depths of up to 25 feet. Excavation of approximately 10,000 cubic yards of soil would eliminate most if not all of the residual petroleum hydrocarbons at the site. However, as discussed in this order, there would be little benefit to current or anticipated beneficial uses of groundwater that is not meeting WQOs for benzene, EDC and TPH_g. In addition, if complete removal of detectable traces of petroleum constituents becomes the standard for UST corrective actions, the statewide technical and economic implications will be enormous. For example, disposal of soils from comparable areas of excavation throughout the state would greatly impact already limited landfill space. In light of the minimal, if any, benefit of attaining further reductions in concentrations of benzene, EDC and TPH_g at this site, the precedent that would be set by requiring additional excavation and the fact that beneficial uses are not threatened, attaining background water quality at Petitioner's site is not feasible. It is impossible to determine the precise level of water quality that will be attained given the limited residual benzene, EDC and TPH_g that remains at the site, but in light

of all the factors discussed above, a level of water quality will be attained that is consistent with the maximum benefit to the people of the State.⁶

The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate for this site requires a determination that the alternative level of water quality will not result in water quality less than that prescribed in the relevant Basin Plan. Pursuant to SWRCB Resolution No. 92-49, a site may be closed if the Basin Plan water quality goals and objectives will be met within a reasonable time frame.

In this particular case, as discussed above, benzene, EDC and TPH_g in the shallow groundwater in immediate contact with the limited residual petroleum hydrocarbon constituents adsorbed to soils will likely remain above, and not meet, the CCRWQCB Basin Plan objectives for a significant period of time. This time period could be anywhere from years to decades for benzene and EDC to degrade below MCLs for that limited volume of groundwater in immediate contact with longer chain, immobile residual petroleum constituents adsorbed to soils.

Nonetheless, during this time, the residual concentrations in excess of CCRWQCB Basin Plan objectives will not pose a threat to current or future beneficial uses. It is not likely that BTEX and EDC will migrate beyond the current limited spatial extent (120 feet downgradient of the former UST pit). It is also highly unlikely that this shallow groundwater zone will be used as a source of drinking water. Thus, the period of time that it will take for water quality in this limited area to meet all CCRWQCB Basin Plan goals and objectives is a reasonable time frame. Closure of the site, given the facts in this particular case, is appropriate.

⁶ In approving an alternative level of water quality less stringent than background, the SWRCB has also considered the factors contained in California Code of Regulations, title 23, section 2550.4, subdivision (d). As discussed earlier, the adverse effect on shallow groundwater will be minimal, and there will be no adverse effect on the groundwater contained in deeper aquifers, given the physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the site and surrounding land; and the quantity of the groundwater and direction of the groundwater flow. In addition, the potential for adverse effects on beneficial uses of groundwater is low, in light of the proximity of groundwater supply wells; the current and potential future uses of groundwater in the area; the existing quality of groundwater; the potential for health risks caused by human exposure; the potential damage to wildlife, crops, vegetation, and physical structures; and the persistence and permanence of potential effects. Finally, a level of water quality less stringent than background is unlikely to have any impact on surface water quality, in light of the volume and physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the site and surrounding land; the quantity and quality of groundwater and the direction of groundwater flow; the patterns of precipitation in the region, and the proximity of residual petroleum to surface waters.

CONCLUSIONS

1. Residual soil impacts have been reasonably characterized and are not likely to pose a threat to public health and safety with the current land use. Should the current land use change, any impacts from remaining affected soil may, depending on the new land use, need to be addressed. A note to this effect will be added to the Geotracker database, which can be accessed on-line by the public.
2. Groundwater beneath Petitioner's site presently meets Basin Plan numeric water quality objectives for toluene, ethylbenzene and xylenes. The majority of the monitor wells exhibit benzene concentrations below WQOs, and residual benzene and EDC remaining at the site are attenuating to WQOs. The highest concentrations of benzene and EDC are 150 ppb and 5 ppb, respectively, at the former UST pit area and WQOs for benzene and EDC are met 120 feet downgradient of the former UST pit area.
3. The nearest active water supply well is located 500 feet away. Shallow groundwater immediately underlying Petitioner's site is moving in a direction away from the well. Shallow groundwater is hydraulically separated from deeper, confined groundwater production zones.
4. There is no MTBE originating from Petitioner's site. MTBE detected at the site is from the upgradient World Oil site. This Order addresses residual petroleum hydrocarbons on Petitioner's site, regardless of their origin, and does not address effects of oxygenates that have encroached onto Petitioner's site from the upgradient releases.
5. No further corrective action is necessary for the releases from dispensers and USTs that were formerly located on the site.
6. The level of site cleanup, which included removal of the USTs, over-excavation and disposal of soil in 1991 and natural attenuation for the past 13 years, is consistent with the maximum benefit to the people of the State.
7. Detectable concentrations of benzene, EDC and TPH_g in shallow groundwater will likely remain above WQOs for years to decades.
8. Achieving WQOs for all constituents from the Petitioner's former USTs in a short period of time would require extensive excavation of the site, which would be costly.
9. The determination as to what constitutes a reasonable period of time to attain water quality objectives and goals must be based on evaluation of all relevant factors, including but not

limited to the extent and gravity of any threat to public health and the environment during the period required to meet Basin Plan objectives. Although the time required to attain objectives with respect to the 5 ppb odor threshold for TPH_g in this case may be more lengthy than that for benzene and EDC, it is a reasonable period of time considering the facts of this particular case. It is unlikely that BTEX and EDC petroleum constituents will migrate beyond the current limited spatial extent (120 feet downgradient of the former UST pit), and that this particular commercial/residential area will be used directly as a source of drinking water in the foreseeable future.

10. The above conclusions are based on the site-specific information relative to this particular case.
11. Site closure is based on the condition that the Petitioner be required to provide reasonable access to the neighboring World Oil site for any necessary corrective action.

V. ORDER

IT IS THEREFORE ORDERED that Petitioner's case be closed, and no further action is required for the release from USTs formerly located on Petitioner's site. The Chief of the SWRCB's Division of Water Quality is directed to issue Petitioner a closure letter consistent with Health and Safety Code section 25296.10, subdivision (g).

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on November 18, 2004.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gary M. Carlton
Nancy H. Sutley

NO: None.

ABSENT: None.

ABSTAIN: None.



Debbie Irvin
Clerk to the Board

STATE WATER BOARD
ORDER: WQ 2005-0008-UST

In The Matter Of The Petition Of

DAN THOMAS

For Review of Denial of Petroleum Underground Storage Tank Site Closure
at 596 East Perkins Street, Ukiah, California

BY THE BOARD:

Dan Thomas (petitioner) seeks review of the decision of the North Coast Regional Water Quality Control Board (North Coast Water Board) not to close petitioner's case involving an unauthorized release of petroleum at his site located at 596 East Perkins Street, Ukiah, California. For the reasons set forth below, this Order determines that petitioner's case should be closed and no further action related to the release should be required.

I. STATUTORY AND REGULATORY BACKGROUND

Owners and operators of underground storage tanks (USTs) and other responsible parties may petition the State Water Resources Control Board (State Water Board) for a review of their case if they feel the corrective action plan for their site has been satisfactorily implemented, but closure has not been granted. (Health and Saf. Code, § 25296.40, subd. (a)(1).)¹ Aggrieved persons, including UST owners, operators, and other responsible parties, may also appeal to the State Water Board for review of certain actions of Regional Water Quality Control Boards (Regional Water Boards) or failures to act (Wat. Code, § 13320, subd. (a).)

¹ To the extent that the State Water Board may lack authority to review this petition pursuant to Health and Safety Code section 25296.40, subsection (a)(1) because the petitioner did not submit a corrective action plan for the site, the petition is being reviewed on the State Water Board's own motion pursuant to State Water Board Resolution No. 88-23.

Several statutory and regulatory provisions provide the State Water Board, Regional Water Boards and local agencies with broad authority to require responsible parties to clean up a release from a petroleum UST. (e.g., Health & Saf. Code, § 25296.10; Wat. Code, § 13304, subd. (a).) The State Water Board has promulgated regulations specifying corrective action requirements for petroleum UST cases (Cal. Code Regs., tit. 23, §§ 2720-2728.) The regulations define corrective action as "any activity necessary to investigate and analyze the effects of an unauthorized release, propose a cost-effective plan to adequately protect human health, safety and the environment and to restore or protect current and potential beneficial uses of water, and implement and evaluate the effectiveness of the activity (ies)." (Cal. Code Regs., tit. 23, § 2720.) Corrective action consists of one or more of the following phases: (1) preliminary site investigation, (2) soil and water investigation, (3) corrective action plan implementation, and (4) verification monitoring. (Cal. Code Regs., tit. 23, § 2722, subd. (a).)

The preliminary site assessment phase includes initial site investigation, initial abatement actions, initial site characterization and any interim remedial action. (Cal. Code Regs., tit. 23, § 2723, subd. (a).) Corrective action is complete at the conclusion of the preliminary site assessment phase, unless conditions warrant a soil and water investigation. A soil and water investigation is required if any of the following conditions exists (1) There is evidence that surface water or groundwater has been or may be affected by the unauthorized release; (2) Free product is found at the site where the unauthorized release occurred or in the surrounding area; (3) There is evidence that contaminated soils are, or may be in contact with surface water or groundwater; or (4) The regulatory agency requests an investigation based on the actual or potential effects of contaminated soil or groundwater on nearby surface water or groundwater resources, or based on the increased risk of fire or explosion. (Cal. Code Regs., tit. 23, §2724.)

The purpose of a soil and water investigation is "to assess the nature and vertical and lateral extent of the unauthorized release and to determine a cost-effective method of cleanup." (Cal. Code Regs., tit. 23, § 2725, subd. (a).) Section 13267, subdivision (b) of the Water Code provides that "...the regional board may require that any person discharging or proposing to discharge waste ...that could affect the quality of waters within its region shall furnish ... those technical and monitoring program reports as the Board may specify. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

State Water Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code §13304* also applies to petroleum UST cases. Resolution No. 92-49 directs that water affected by an unauthorized release attain either background water quality or the best water quality that is reasonable if background water quality cannot be restored. (State Water Board Resolution No. 92-49, Section III.G.) Any alternative level of water quality less stringent than background must be consistent with the maximum benefit to the people of the state, not unreasonably affect current and anticipated beneficial use of affected water, and not result in water quality less than that prescribed in the water quality control plan for the basin within which the site is located. (*Ibid.*)

Resolution No. 92-49 does not require, however, that the requisite level of water quality be met at the time of site closure. Resolution No. 92-49 specifies compliance with cleanup goals and objectives within a reasonable time frame (*Id.* at section III.A.). Therefore, even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable period.²

The North Coast Water Board Water Quality Control Plan (Basin Plan) designates existing and potential beneficial uses of groundwater in the Russian River Hydrologic Unit as municipal and domestic supply (MUN), agricultural supply (AGR), and industrial process supply (PROC) (North Coast Water Board & State Water Board, Water Quality Control Plan for the North Coast Region (1994) at p.2-6.00.). The Basin Plan specifies a narrative taste and odor water quality objective (WQO) for groundwater with an MUN beneficial use designation as follows: "Groundwaters shall not contain taste- or odor-producing substances at concentrations which cause nuisance or adversely affect beneficial uses" (*Id.* at p. 3-11.) The Basin Plan also contains the following narrative WQO for "Chemical Constituents": "Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits cited in CCR, Title 22, Division 4, Chapter 15, Article 4, Section 64435 Tables 2 and 3, and Section 64444.5 (Table 5) and listed in Table 3-2 of this Plan. Groundwaters used for agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use (*Id.* at p. 3-11.)"

With regard to the WQOs for "Chemical Constituents", the Basin Plan has set "Concentrations Not To Be Exceeded In Domestic or Municipal Supply" for benzene, ethylbenzene, and xylene at 1 ppb, 680 ppb, and 1,750 ppb, respectively (*Id.* at p. 3-8). The threshold odor concentration of

² See for example State Water Board Orders WQ 98-04 UST, WQ 98-10 UST, and WQ 03-0001 UST.

three common petroleum constituents, ethylbenzene, toluene, and xylene are 29 ppb, 42 ppb, and 17 ppb respectively. (USEPA, Federal Register, Volume 54, No.97, May 1989.) The threshold odor concentration of commercial gasoline (measured as total petroleum hydrocarbon gasoline, or TPH-g) is commonly accepted to be 5 ppb, with 10 ppb giving a strong odor. The threshold odor concentration of commercial diesel (measured as TPH-d) is commonly accepted to be 100 ppb. (State Water Board, Water Quality Criteria (2d ed. 1963) p. 230.)

II. FACTUAL BACKGROUND

A. Site Setting

Petitioner's site is a vacant lot located at the northwest corner of the intersection of East Perkins Street and Orchard Avenue, about 500 feet west of the East Perkins Street/US Highway 101 interchange. There are two gasoline service stations across the intersection to the south and southeast; a fast food franchise is located to the east, and a shopping mall to the north and west. Corrective actions are currently underway for a release at the Chevron UST site at the southeast corner of the intersection and a soil and groundwater investigation was recently performed at the Beacon Station to the south. There are no municipal or domestic supply wells located within 2,000 feet of the site and the nearest perennial surface water feature, the Russian River, is located about 4,800 feet to the east; Gibson Creek, an ephemeral stream, is located about 850 feet to the south.

In the vicinity of the site, fine-grained clayey alluvial sediments of the Russian River floodplain, to a depth of about 15 feet below ground surface (bgs), overlie coarse-grained gravelly sediments. The low permeable clayey stratum causes groundwater in the underlying very high permeable sands and gravels, to come under confined conditions during the winter and spring. The potentiometric surface (water level) measured in site monitor wells seasonally fluctuates ten to fifteen feet (from about 8 feet to 21 feet bgs). Groundwater flow is southerly at a gradient of about 0.06 feet/foot.

B. UST Case History

A gasoline service station occupied the site from 1969 through early 1992. In April 1992, four USTs were removed from the northeastern portion of the site (Figure 1, Site Map) and in December 1992, the tank pit was over-excavated. Eight soil samples collected from the final excavation depth of 11 feet to 13.5 feet bgs and analyzed for TPH-g and BTEX tested non-detect for all constituents except one sample that had respective ethylbenzene and xylene concentrations of 0.005 ppm and 0.015 ppm.

In February 1993, monitor wells MW-1, MW-2, and MW-3 were installed around the former UST excavation. Analyses of groundwater samples subsequently collected from these wells tested

non-detect for BTEX, and TPH-g; only the sample from well MW-3 had a reported TPH-d concentration of 90 ppb.

In September 1993, the pump islands and associated piping were removed from the southern portion of the site. Ten soil samples were collected from beneath the locations of the pump islands and piping and analyzed for TPH-g and BTEX. One sample from a depth of 5 feet bgs had reported benzene and ethylbenzene concentrations of 0.0095 ppm and 0.0047 ppm, respectively. Ethylbenzene and xylene at 0.0047 ppm and 0.034 ppm were reported for a second sample from a depth of 8 feet bgs, and TPH-g at 3.9 ppm was detected in a third sample from a depth of 4.5 feet bgs.

In October 1993, wells MW-4 and MW-5 were installed to assess groundwater impacts at and east of the pump island. Well MW-4 was placed near the southeast corner of the former pump island and well MW-5 was placed about 35 feet east of MW-4, near the northwest corner of the intersection. The initial analysis of groundwater from well MW-4 had reported concentrations of TPH-g, TPH-d, and benzene of 23,000 ppb, 3,500 ppb, and 900 ppb, respectively. Initial concentrations of TPH-g, TPH-d, and benzene in groundwater samples from well MW-5 were 450 ppb, 240 ppb, and 27 ppb, respectively.

In November 1993, two phases of excavation in the area of the former pump island to depths as great as 25 feet bgs were performed. Soil samples collected at 10.5 to 18 feet bgs from the excavations had reported total BTEX concentrations ranging from 4 ppm to 110 ppm and TPH-g concentrations ranging from 49 ppm to 1,600 ppm.

By letter dated November 9, 1994, the North Coast Water Board Executive Officer concurred with petitioner that further excavation of soil at the site was not feasible, would not be cost effective, or result in improved groundwater conditions.

In May 2000, petitioner submitted to the North Coast Water Board a survey of sensitive receptors near the site, a summary of historic groundwater analytical data, and a request for case closure. The survey documented that there were no municipal or domestic water supply wells within 2,000 feet of the site. By letter dated August 11, 2000, North Coast Water Board staff rejected the closure request because detectable concentrations of dissolved-phase petroleum hydrocarbon constituents in site groundwater exceeded Basin Plan WQOs. North Coast Water Board staff also commented that the extent of soil and groundwater contamination had not been defined.

In August 2002, two borings were drilled about 30 feet and 120 feet southeast of well MW-4 to assess the extent of affected soil and groundwater beneath the intersection. One of the borings, near the southeast corner of the intersection, was completed as well MW-7. One soil sample collected at 20 feet bgs from boring B-6 had a reported TPH-g concentration of 1.2 ppm; all other soil samples from this boring and from the MW-7 well boring tested non-detect for all gasoline constituents. Concentrations of gasoline constituents in groundwater samples from well MW-7 have ranged from non-detect to about 1 ppb for benzene and xylene and non-detect to 290 ppb and 130 ppb for TPH-g and TPH-d, respectively.

In December 2002, petitioner, citing the results of the August 2002 investigation, recommended case closure. North Coast Water Board staff, in a letter dated January 7, 2003, responded by saying that they did not concur with the closure recommendation based on a review of recent report submittals and the case file. On January 16, 2003, petitioner submitted a report explaining the site conceptual model and recommended case closure. North Coast Water Board staff, in a letter dated January 31, 2003, responded by saying that based on a review of the document and the case file, they did not concur with the closure recommendation.

In March 2003, petitioner collected and analyzed 57 soil samples from ten borings drilled to depths of up to 25 feet bgs south and east of the former pump island excavation. Benzene and MTBE were reported non-detect for all samples, toluene was detected in only one sample at a concentration of 0.005 ppm, ethylbenzene was detected in three samples at 0.0058 ppm to 5.2 ppm, and xylene was detected in seven samples at concentrations ranging from 0.005 ppm to 89 ppm. Concentrations of TPH-g ranging from 1.4 ppm to 1,100 ppm were detected in 34 samples and concentrations of TPH-d, ranging from 1.0 ppm to 100 ppm, were detected in 35 samples. Petitioner submitted a report of the findings and once again requested case closure. North Coast Water Board staff, in a letter dated May 29, 2003, responded by saying that they did not concur with the closure recommendation, noted that it was feasible to excavate some of the remaining contaminated soil, and directed petitioner to submit an interim remedial action plan to address the remaining soil and groundwater contamination.

Petitioner submitted to the North Coast Water Board a Request for Site Closure report dated October 30, 2003. The report presented the rationale that previous excavation of contaminated soil, decreasing concentration trends of dissolved phase constituents in groundwater, and an absence of nearby down-gradient sensitive receptors, was justification for case closure. North Coast Water Board staff, in a letter dated December 12, 2003, rejected petitioner's closure request. The rationale for the rejection was that case closures are based on meeting Basin Plan WQOs and an absence of soil contamination that would further affect groundwater quality, criteria that petitioner's site did not meet.

By letter dated March 12, 2004, petitioner requested that the North Coast Water Board Executive Officer (EO) confirm staff's denial of case closure so that the decision could be appealed to the State Water Board.³ By letter dated April 19, 2004, the EO confirmed staff's denial by concluding that: 1) affected soil remains at the site; 2) dissolved phase petroleum hydrocarbon constituents remain above Basin Plan WQOs; and 3) the TPH-d concentration trend for groundwater samples from monitor well MW-4 did not indicate WQOs are achievable via natural attenuation. Petitioner appealed the decision to the State Water Board on May 10, 2004.

In the ten years since groundwater samples from well MW-4 were first analyzed for petroleum hydrocarbons, concentrations of benzene have decreased to "non-detect" and concentrations of TPH-g and TPH-d (1,800 ppb and 530 ppb respectively as of March 2004) have declined by an order of magnitude. Similarly, concentrations of all gasoline constituents in groundwater samples from well MW-5 have tested non-detect since January 2002.

In November 2004, State Water Board staff suggested that petitioner collect data documenting the occurrence of intrinsic bioremediation of residual petroleum hydrocarbons in site soil and groundwater. On December 15, 2004, petitioner obtained groundwater samples from wells MW-1, MW-3, MW-4, and MW-5 and had the samples analyzed for sulfate, nitrate, ferrous iron, and bicarbonate alkalinity, geochemical parameters useful for evaluating microbial metabolism of petroleum hydrocarbons. The analytical data demonstrated that affected groundwater is subject to anaerobic biodegradation via denitrification, and sulfate and iron reduction.

III. CONTENTIONS AND RESPONSES

A. CONTENTIONS

Petitioner contends that the North Coast Water Board staff's reasons for denying site closure are contrary to the intent of State Water Board Resolution No. 92-49 and are inconsistent with a November 1994 North Coast Water Board directive that acknowledged further excavation at the site was deemed to be economically infeasible and that additional excavation was not required.

North Coast Water Board staff contend that residual petroleum hydrocarbons in site soil will continue to affect groundwater with petroleum hydrocarbon constituent concentrations greater than

³ Title 23 CCR Section 2814.6(b)(2) specifies that closure denial must be made by the Regional Water Board EO before one can appeal the decision to the State Water Board.

Basin Plan WQOs. Specifically, the North Coast Water Board contends that with respect to groundwater samples from well MW-4, the concentration of TPH-g remains at 2,600 ppb, and there is no sign that the concentration will decline further, and that there has been no significant decline in TPH-d concentrations in well MW-4 since the year 2000.⁴ The North Coast Water Board staff further contend that petitioner has misinterpreted the content of the November 1994 letter.

B. RESPONSES

With regard to the contention that the North Coast Water Board's actions are contrary to the intent of State Water Board Resolution No. 92-49, petitioner's argument has merit. As explained below, State Water Board Resolution No.92-49 does not require that the requisite level of water quality be met at the time of site closure but allows for compliance with cleanup goals and objectives within a reasonable time frame. Further, residual petroleum hydrocarbon constituents in shallow soil and groundwater at the petitioner's site do not pose a threat to human health and safety, or the environment, and do not adversely affect current or anticipated beneficial use of water for the following reasons:

- The primary sources of the release, the USTs and pump islands, were removed in 1993 in addition to 690 cubic yards of affected soil.
- Available data indicate that groundwater at or immediately down gradient of petitioner's site is not directly being used presently or has any likelihood of being used in the future, for domestic or municipal supply.
- Residual petroleum hydrocarbon constituents in site soil and groundwater are subject to natural attenuation via microbial metabolism.

Additionally, the level of site cleanup is consistent with the maximum benefit to the people of the state and the remaining petroleum hydrocarbons in shallow site groundwater will meet the municipal and domestic supply beneficial use WQOs in the North Coast RWQCB's Basin Plan within a reasonable period of time.

⁴As discussed later, in March of 2004, the TPH-g concentration in the groundwater sample from monitor well MW-4 was 1,800 ppb. The North Coast Water Board's contention, that the TPH-g concentration remains at 2,600 ppb, is based on the August 2003 sampling result. Regarding TPH-d, the North Coast Water Board's initial comments on the petition contend that there was an increasing trend in TPH-d concentrations in well MW-4. The North Coast Water Board's TPH-d trend analysis was positively skewed by two early groundwater samples that had reported non-detect concentrations of TPH-d in well MW-4. After submitting its initial comments, the North Coast Water Board removed the two questionable non-detect values from their analysis, and their most recent analysis shows a decreasing trend for TPH-d concentrations in well MW-4.

North Coast Water Board staff does not dispute petitioner's contention that their case closure denial may be contrary to the intent of State Water Board Resolution No. 92-49, but rather assert that to close the case would be inconsistent with State Water Board Resolution No. 88-63. As explained below, closure of petitioner's case is consistent with State Water Board Resolution Nos. 92-49 and 88-63.

As indicated above, petitioner and the North Coast Water Board have conflicting interpretations of the North Coast Water Board's November 9, 1994, letter concerning additional soil excavation at the site. The question before us is whether closure is appropriate based upon current site conditions, so it is unnecessary to determine the correct interpretation of the November 9, 1994, letter in order to resolve this petition.⁵

C. DISCUSSION

In 2002 and 2003, at the behest of North Coast Water Board staff, petitioner drilled two soil borings (well MW-7 and B-6) southeast of the pump island area and ten soil borings (B-101 through B-110) south and east of the limit of the excavation. Soil samples and groundwater samples from these borings were collected and analyzed to assess the extent and magnitude of residual gasoline contamination at and down-gradient of the former pump island. In light of these new data, North Coast Water Board staff concluded that, while all remaining residual gasoline in soil at and near petitioner's site cannot reasonably be excavated, affected soil in the area east of the former excavation and north of the sidewalk can. It is this area North Coast Water Board staff is requiring to be excavated in order to move the site toward closure.

Affected soil in the area north of the sidewalk, with the installation of sheet piling along the edge of the sidewalk, could be removed and the excavation filled with clean soil. However, removal of this soil would not necessarily result in case closure by the North Coast Water Board. Available data indicate that remaining soil contamination beneath the sidewalk and East Perkins Street, and at the base of the former pump island excavation (soil samples from the bottom of the excavation had reported TPH-g concentrations as great as 1,600 ppm), would continue to affect groundwater quality with concentrations of dissolved-phase petroleum hydrocarbons in excess of Basin Plan WQOs.

⁵ The State Water Board finds that this issue is insubstantial and inappropriate for State Water Board review. (See *People v. Barry* (1987) 194 Cal.App.3d 158 [239 Cal.Rptr. 349]; Cal. Code Regs., tit. 23, § 2052, subd. (a)(1) and § 2814.7, subd. (d)(4).)

State Water Board Resolution No. 92-49 does not require that the requisite level of water quality be met at the time of site closure but allows for compliance with cleanup goals and objectives within a reasonable time frame (*Id.* at section III.A.). Therefore, even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable period.⁶ State Water Board Resolution No. 88-63, the Sources of Drinking Water Policy, takes an inclusive approach to the designation of beneficial use of drinking water. State Water Board Resolution No. 88-63 provides that all water should be considered a source of drinking water unless a specific exception applies. By designating most groundwater as suitable for drinking water, WQOs to protect MUN beneficial use are the minimum WQOs in most cleanup cases. This order applies WQOs that protect MUN beneficial use and is, therefore, consistent with State Water Board Resolution No. 88-63. Consistent with State Water Board Resolution No. 92-49, this order finds that the MUN WQOs need not be met at the time of closure, but within a reasonable period.

Technologies suitable for remediation of the types of affected soil at the site are excavation and natural attenuation. Excavation of all traces of residual petroleum hydrocarbon constituents contributing to detectable concentrations in shallow groundwater is technically feasible and would require removal of soil across the southern portion of the site and beneath the sidewalk and south into the East Perkins Street right-of-way. All parties agree that this alternative is economically infeasible. Additionally, the Ukiah city engineer is on record as opposing any excavation beneath or south of the sidewalk due to concerns for public safety. Removal of the affected soil that North Coast Water Board staff argues for (a portion that excludes the area beneath the sidewalk, East Perkins Street, and the former pump island excavations) is technically feasible, but it is not economically feasible. Approximately 550 cubic yards of contaminated soil would need to be excavated at a cost of about \$80,000 to \$100,000. The corresponding reduction in concentration levels would not be significant because residual petroleum hydrocarbons would remain in soil in the area of the former pump island excavations and beneath the sidewalk and East Perkins Street. By excavating the contaminated soil identified by the North Coast Water Board staff, WQOs for TPH-g and TPH-d would be met sooner than if the soil was not excavated, but it will not result in shallow affected groundwater achieving Basin Plan WQOs in a significantly shorter amount of time. Because of the minimal benefit of attaining further reductions in concentrations of TPH-g and TPH-d at this site and the fact that the use of the groundwater is not affected or threatened, excavating a portion of the soil to reduce the time period in which WQOs will be met in this small volume of groundwater is not economically feasible.

⁶ See for example State Water Board Orders WQ 98-04 UST, WQ 98-10 UST, and WQ 03-001 UST.

Natural attenuation is a feasible remedial alternative for site conditions. Residual gasoline present in the clayey soil will degrade to carbon dioxide and water and, over time, will cease to affect shallow site groundwater with constituent concentrations that exceed Basin Plan WQOs. The time required to achieve this condition would likely be a few decades.

In their June 28, 2004, response to the petition, North Coast Water Board staff state that "... concentrations of TPH-g in monitoring well MW-4 remain above 2,600ppb and show no signs of dropping." Two months earlier, the North Coast Regional Board seemed to acknowledge that concentrations of TPH-g in groundwater samples from monitor well MW-4 were declining when they stated that "[a] review of all groundwater analytical results to date for monitoring (well) MW-4 indicates that concentrations of TPH-g may achieve water quality objectives within 20 to 25 years." (North Coast Water Board letter dated April 19, 2004, p.2) The North Coast Water Board's own trend analysis demonstrates that concentrations of TPH-g in groundwater samples from well MW-4 are declining. A groundwater sample collected from the well in March 2004 had a reported TPH-g concentration of 1,800 ppb, a value that falls squarely on the trend line of the North Coast Water Board's trend analysis.

The North Coast Water Board contends that there has been no significant decline in TPH-d concentrations in groundwater samples from well MW-4 since the year 2000. Well MW-4 was sampled only once in 2000 (August) and produced a sample with a TPH-d concentration of 1,000 ppb. In thirteen previous samples from well MW-4 between 1994 and 1999, concentrations of TPH-d ranged from 850 ppb to 3,000 ppb. Between 2001 and 2003, the well was sampled eight times and produced samples with TPH-d concentrations ranging from 250 ppb and 1,700 ppb.⁷ The concentration data thus show a significant degree of short term and long-term temporal variation. Citing a year when only one sample is collected and comparing it to subsequent years when multiple samples were collected can skew the analysis. When the concentration data are viewed in their entirety and in the context of the documented bioattenuation, a declining concentration trend is demonstrated. The North Coast Water Board's analysis for TPH-d in well MW-4 shows a decreasing trend in concentration levels.

The remaining concentrations of TPH-g and TPH-d in shallow groundwater in immediate contact with residual TPH-g and TPH-d adsorbed to soil will likely remain above the Basin Plan's municipal and domestic supply beneficial use WQOs in a localized volume of surrounding groundwater for a few decades. Considering the absence of active municipal or domestic supply wells in close

⁷ A sample collected from the well in November 2002, had a reported TPH-d concentration of 3,200 ppb. However, it was a "no-purge" sample, i.e., the standard three casing volumes of groundwater were not removed prior to

proximity to petitioners' site, local hydrogeologic considerations, demonstrated bioattenuation, and standard well construction practices, such a limited, isolated scenario will not unreasonably affect existing or anticipated beneficial uses.

In approving alternative levels of water quality less stringent than background, the State Water Board considers the factors contained in CCR, title 23, section 2550.4, subdivision (d). As discussed earlier, the adverse effect on shallow groundwater will be minimal and localized, given the physical and chemical characteristics of the petroleum constituents, the hydrogeologic characteristics of the site, and surrounding land use. In addition, the potential for adverse effects to beneficial uses of groundwater is low, given: (1) the current and potential future uses of groundwater in the area; (2) the potential for health risks caused by human exposure; (3) the potential damage to wildlife, crops, vegetation, and physical structures; and (4) the persistence and permanence of potential effects, i.e., the environmental fate of the remaining, residual hydrocarbons in site soil and groundwater. Further, a level of water quality less stringent than background is unlikely to have any impact on surface water quality for these same reasons.

The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate under Resolution No. 92-49, requires a determination that the alternative level of water quality will not result in water quality less than that prescribed in the relevant Basin Plan. Pursuant to Resolution No. 92-49, a site may be closed if the Basin Plan requirements will be met within a reasonable time frame. In this particular case, as discussed above, TPH-g and TPH-d in shallow groundwater in immediate contact with the limited residual petroleum constituents adsorbed to soil will likely remain above their respective 5 ppb and 100 ppb odor threshold for water and thus violate the Basin Plan's narrative odor objective for municipal and domestic supply beneficial use in a localized volume of surrounding groundwater for as long as a few decades. Nonetheless, during this time the residual hydrocarbon concentrations above the narrative odor objective detected in shallow groundwater will not pose a threat to current or anticipated beneficial uses. The limited area where groundwater exceeds WQOs for municipal and domestic supply beneficial use is located in a commercial area near Highway 101, and it is highly unlikely that a water supply well will be installed in the vicinity of the site during the period that WQOs for municipal and domestic supply beneficial use are exceeded. Even if that unlikely event occurred, standard well construction practices would prevent the shallow affected groundwater from having any adverse effect on deeper groundwater. Further, it is highly unlikely that TPH-g and TPH-d detected in site groundwater will migrate substantially beyond its current limited spatial extent.

sample collection, and thus not representative of groundwater in the water bearing zone. The subsequent (March 2003) samples collected after well purging had a reported TPH-d concentration of 450 ppb.

Though the longer-chain hydrocarbons comprising TPH-g and TPH-d biodegrade more slowly than shorter-chain petroleum constituents such as benzene, they are more recalcitrant and much less mobile (i.e., less volatile, less soluble, and highly absorbent). Thus, the period of time that it will take for water quality in this limited area to meet Basin Plan objectives for municipal and domestic supply beneficial use is a reasonable time frame. Closure of the site, given the facts in this particular case, is appropriate.

IV. SUMMARY AND CONCLUSIONS

1. Available data indicate that there is no MTBE originating at this site. Residual concentrations of petroleum hydrocarbons, including benzene, at petitioner's site have degraded, and will continue to degrade, due to natural attenuation.
2. Petitioner's site is located in a commercial area. No active water supply wells have been identified within 2,000 feet of the site, and the nearest surface water body (Russian River) is 4,800 feet away.
3. Given the shallowness of the affected soil, the very limited extent of affected groundwater at petitioner's site and minimum well construction standards, the residual, detectable concentrations of petroleum hydrocarbons do not pose a threat to human health and safety, or the environment, and do not adversely affect current or anticipated beneficial uses of water.
4. Soil and groundwater investigations at petitioner's site have been adequate to delineate contamination.
5. The level of site cleanup is consistent with the maximum benefit to the people of the state.
6. Detectable TPH-g and TPH-d in shallow groundwater in immediate contact with the limited, weathered residual petroleum hydrocarbons adsorbed to soil particles will likely remain above Basin Plan objectives (5 ppb and 100 ppb, respectively) for municipal and domestic supply beneficial use and thus may exceed those objectives in a very localized, small volume of surrounding groundwater for a few decades.
7. The determination as to what constitutes a reasonable period must be based on evaluation of all relevant factors, including but not limited to the extent and gravity of any threat to public health and the environment during the period required to meet Basin Plan objectives. Although the time required to attain objectives will likely be as long as a few decades, it is a reasonable period considering the facts of this case, including that there are no known drinking water wells within 2,000 feet down-gradient of the site; it is highly unlikely that TPH-d and TPH-g detected in localized areas of the site will migrate substantially beyond the current limited spatial extent; and it is highly unlikely that this particular very limited volume of affected shallow groundwater will be used directly as a source of drinking water.
8. Therefore, no further corrective action is necessary.

9. The above conclusions are based on the site-specific information relative to this case.

V. ORDER

IT IS THEREFORE ORDERED that petitioner's case be closed and no further action related to the UST be required. The Chief of the Division of Water Quality is directed to issue petitioner a closure letter consistent with Health and Safety Code, section 25296.10, subd. (g)

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Board held June 16, 2005.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gerald D. Secundy
Tam M. Doduc

NO: None.

ABSENT: None.

ABSTAIN: None.



Debbie Irvin
Clerk to the Board

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER: WQO 2003 - 0001 -UST

In the Matter of the Petition of
MICHAEL O'DONOGHUE TRUST

For Review of Denial of Petroleum Underground Storage Tank Site
Closure at 6862 Manchester Avenue, Buena Park, California

BY THE BOARD:

The Michael O'Donoghue Trust (petitioner) seeks review of the decision of the Santa Ana Regional Water Quality Control Board (SARWQCB) not to close petitioner's case involving an unauthorized release of petroleum at its site located at 6862 Manchester Boulevard, Buena Park, California. For the reasons set forth below, this Order determines that petitioner's case should be closed and no further action related to the release should be required and the site's nine monitoring wells should be destroyed.¹

I. STATUTORY AND REGULATORY BACKGROUND

Owners and operators of underground storage tanks (USTs) and other responsible parties can petition the State Water Resources Control Board (SWRCB) for a review of their case if they feel the corrective action plan for their site has been satisfactorily implemented, but closure has not been granted. (Health and Safety Code, § 25299.39.2, subd. (b)(1).) Aggrieved persons, including UST owners and operators and other responsible parties, may also appeal to the SWRCB for review of certain actions of Regional Water Quality Control Boards (RWQCBs) or failures to act (Wat. Code, § 13320, subd. (a).)

Several statutory and regulatory provisions provide the SWRCB, RWQCBs, and local agencies with broad authority to require responsible parties to clean up a release from a petroleum UST

¹ Because we are reviewing the petition on the merits, we will not act on petitioner's stay request that was received by the SWRCB on November 12, 2002.

(e.g., Health & Saf. Code, § 25299.37; Wat. Code, § 13304, subd. (a)). The SWRCB has promulgated regulations specifying corrective action requirements for petroleum UST cases (Cal. Code Regs., tit. 23, §§ 2720-2728). The regulations define corrective action as "any activity necessary to investigate and analyze the effects of an unauthorized release, propose a cost-effective plan to adequately protect human health, safety and the environment and to restore or protect current and potential beneficial uses of water, and implement and evaluate the effectiveness of the activity (ies)." (Cal. Code Regs., tit. 23, § 2720.) Corrective action consists of one or more of the following phases: (1) preliminary site investigation, (2) soil and water investigation, (3) corrective action plan implementation, and (4) verification monitoring. (Cal. Code Regs., tit. 23, § 2722, subd. (a).)

The preliminary site assessment phase includes initial site investigation, initial abatement actions, initial site characterization and any interim remedial action. (Cal. Code Regs., tit. 23, § 2723, subd. (a).) Corrective action is complete at the conclusion of the preliminary site assessment phase, unless conditions warrant a soil and water investigation. A soil and water investigation is required if any of the following conditions exists: (1) there is evidence that surface water or groundwater has been or may be affected by the unauthorized release; (2) free product is found at the site where the unauthorized release occurred or in the surrounding area; (3) there is evidence that contaminated soils are or may be in contact with surface water or groundwater; or (4) the regulatory agency requests an investigation based on the actual or potential effects of contaminated soil or groundwater on nearby surface water or groundwater resources, or based on the increased risk of fire or explosion. (Cal. Code Regs., tit. 23, § 2724.)

The purpose of a soil and water investigation is "to assess the nature and vertical and lateral extent of the unauthorized release and to determine a cost-effective method of cleanup." (Cal. Code Regs., tit. 23, § 2725, subd. (a).) Section 13267, subdivision (b) of the Water Code provides that:

" . . . the regional board may require that any person discharging or proposing to discharge waste . . . that could affect the quality of waters within its region shall furnish . . . those technical and monitoring program reports as the Board may specify. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

SWRCB Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code §13304* also applies to petroleum UST cases. Resolution No. 92-49 directs that water affected by an unauthorized release attain either background water quality or the best water quality that is reasonable if background water quality cannot be restored. (SWRCB Resolution No. 92-49, section III.G.) Any alternative level of water quality less stringent than background must be consistent with the maximum benefit to the people of the state, not unreasonably affect current and anticipated beneficial use of affected water, and not result in water quality less than that prescribed in the water quality control plan for the basin within which the site is located. (*Ibid.*)

Resolution No. 92-49 does not require, however, that the requisite level of water quality be met at the time of site closure. Resolution No. 92-49 specifies compliance with cleanup goals and objectives within a reasonable time frame (*Id.* at section III.A.). Therefore, even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable period.

The SARWQCB's Basin Plan (Basin Plan) designates existing and potential beneficial uses of groundwater in the Santa Ana Pressure Area groundwater basin as municipal and domestic supply (MUN), agricultural supply (AGR), and Industrial Process Supply (PROC). (SARWQCB & SWRCB, Water Quality Control Plan, Santa Ana River Basin (1995) at p. 3-28.) The Basin Plan specifies a narrative taste and odor water quality objective as follows: "The groundwaters of the region shall not contain, as a result of controllable water quality factors, taste- or odor-producing substances at concentrations which cause nuisance or adversely affect beneficial uses." (*Id.* at p. 4-14.) The Basin Plan also contains the following narrative water quality objective for "Toxic Substances:" "All waters of the region shall be maintained free of substances in concentrations which are toxic, or that produce detrimental physiological responses in human, plant, animal or aquatic life." (*Id.* at p. 4-14.)

With regard to the water quality objectives for "Toxic Substances," the State Department of Health Services (DHS) has set maximum contaminant levels (MCLs) for benzene, toluene, ethylbenzene, and xylene (BTEX) in drinking water of 1 ppb, 100 ppb, 680 ppb, and 1,750 ppb, respectively (Cal. Code Regs., tit. 22, § 64444). DHS has set primary and secondary MCLs for methyl-tertiary-butyl-ether (MTBE) at 13 ppb and 5 ppb, respectively. (DHS, Drinking

Water Standards, August 3, 2000.) The threshold odor concentration of three common petroleum constituents, ethylbenzene, toluene, and xylene are 29 ppb, 42 ppb, and 17 ppb, respectively. (U.S. EPA, Federal Register, Volume 54, No. 97, May 1989.) The threshold odor concentration of commercial gasoline (measured as total petroleum hydrocarbon gasoline, or TPH-g) is commonly accepted to be 5 ppb, with 10 ppb giving a strong odor. The threshold odor concentration of commercial diesel (measured as TPH-d) is commonly accepted to be 100 ppb. (SWRCB, Water Quality Criteria (2d ed. 1963) p. 230.)

II. FACTUAL BACKGROUND

A. Site Setting

Petitioner's site is located at 6862 Manchester Boulevard, Buena Park, California, within the Santa Ana Pressure Area of the Orange County Groundwater Basin. The site is a retail car dealership and service center situated in a commercial/residential area and immediately adjacent to Interstate Highway 5 (I-5). The nearest water supply well, which is a municipal supply well, is located about 2,700 feet west of the site, and the nearest surface water feature is the Fullerton Creek channel, a storm water runoff conveyance, tributary to the San Gabriel River, located about 900 feet to the north.

The Santa Ana Pressure Area is defined as that area of the basin where surface water and shallow groundwater are prevented from percolating in large quantities into the main production aquifers by shallow aquitards.² The shallow groundwater (at depths of less than 50 feet) is typically of poor quality, occurs in primarily low-permeability clays and silts and intermittent sand lenses, and is of minimal use from a water supply standpoint.³ The principal groundwater supply aquifers in the pressure area are confined aquifers generally occurring at depths between 300 and 2,000 feet, and are principally recharged by either direct percolation of surface water or vertical groundwater flow from overlying, hydraulically-connected aquifers underlying the cities of Anaheim, Fullerton, and Orange.⁴

B. UST Case History

² *Hydrogeology of the Orange County Groundwater Basin – an Overview*. R. Herndon, Manager, Hydrogeology Department, Orange County Water District, 1992, p. 244.

³ *Id.* at p. 244.

⁴ *Id.* at p. 243.

In June 1998, two 2,000-gallon capacity gasoline USTs and one 1,000-gallon capacity diesel UST were removed from the site. The Orange County Health Care Agency (County) had regulatory oversight of UST removal and the ensuing corrective actions. Observations at the time of the removal activities indicated that petroleum hydrocarbon affected soil was present in the bottom of the UST excavation. Analyses of soil samples collected from the base of the walls of the excavation⁵ in June of 1998 showed TPH-g and TPH-d concentrations as high as 5,900 ppm and 23,000 ppm, respectively. Reported concentrations of benzene and MTBE ranged from non-detect to 33 ppm and 0.07 to 12.2 ppm, respectively. In July 1998, approximately 350 cubic yards of affected soil was excavated from the area of the former USTs. The excavation at that time measured about 30 feet by 18 feet by 18 feet deep and it was noted that water was accumulating in the bottom of the excavation from a leaking pipe.⁶ The responsible party indicated that the release was a “soil only” case on the Unauthorized Release Report form dated July 1, 1998. The excavation was subsequently filled with pea gravel and an upgraded UST system.

In September 1998, 18 Hydropunch® borings at locations up to 75 feet from the excavation were advanced to depths of 26 to 30 feet below ground surface (bgs) to characterize site hydrogeology and assess the extent of affected soil and groundwater. Groundwater was encountered at about 23 feet bgs in each of the borings (five feet below the depth of the July 1998 excavation). The stratigraphy was characterized as primarily silty fine sand to about 12 feet bgs, clayey fine sand to about 18 feet bgs and then silty fine sand to the total depth explored.

Soil samples from 13 of the 18 borings were generally collected at 10, 15, and 20 feet bgs and analyzed for TPH-g, BTEX and MTBE. Soil samples that were determined to have high concentrations of TPH-g were also analyzed for TPH-d. The soil sample analytical results showed that soil at 15 feet bgs, and within about 10 feet of the extent of the July 1998 over-excavation, had reported concentrations of TPH-g ranging from 45 to 10,000 ppm; concentrations of benzene and MTBE ranged

⁵ The precise location in the excavation where the samples were obtained is uncertain. The consultant for the petitioner (Atlas Environmental Engineering, Inc.) reported that they were beneath the UST inverts and also from the corners of the excavation. On a drawing, dated June 29, 1998, prepared by the on-site County caseworker, the sample locations are shown to be at the midpoints of the excavation sidewalls.

⁶ July 8, 1998 field activity notes prepared by County caseworker, A. Dietz.

from 0.01 to 2.3 ppm and 0.007 to 0.35 ppm, respectively. The samples analyzed for TPH-d tested non-detect (less than 10 ppm). Two soil samples collected at 20 feet bgs from borings within five feet of the excavation had reported TPH-g concentrations of 1.4 and 3.1 ppm; reported benzene and MTBE concentrations were 0.033 and 0.052 ppm and non-detect and 0.006 ppm, respectively. One soil sample collected at 10 feet bgs from a boring about five feet from the limits of the excavation had a reported TPH-g concentration of 4,500 ppm and benzene and MTBE concentrations of 0.39 ppm and 0.017 ppm, respectively.

Samples of groundwater collected via the Geoprobe® technique from the 18 borings were collected from depths of about 23 to 25 feet bgs and analyzed for TPH-g, BTEX and MTBE. Detectable concentrations of TPH-g ranging from 1,100 ppb to 98,000 ppb were reported for five groundwater samples from borings located within ten feet of the excavation; one sample, from a boring located about 55 feet south of the excavation, had a reported TPH-g concentration of 600 ppb. Detectable concentrations of benzene ranging from 0.3 to 200 ppb were reported for nine of the 18 groundwater samples; MTBE was detected in ten of the samples at reported concentrations ranging from 1.8 to 180 ppb. Toluene and/or xylene was detected in all groundwater samples in concentrations ranging from 0.5 to 22,000 ppb and 0.9 to 27,000 ppb, respectively. The groundwater samples with the highest concentrations of gasoline constituents (TPH-g >1,000 ppb, benzene >10 ppb, and MTBE >10 ppb) were from those borings drilled within ten feet of the UST excavation.

In a workplan submitted to the County dated October 12, 1998, petitioner proposed to construct five groundwater monitoring wells at the site to further characterize soil and groundwater impacts associated with the UST release. The design depth of each well was 30 feet bgs, and the well screens were to extend at least 10 feet above the groundwater level so that the wells could be used for soil vapor extraction. Well installations were initiated on November 6, 1998. During the drilling of the first boring, groundwater was reported to have initially occurred at a depth of 28 feet⁷, which was deeper than estimated. Consequently, the completion design depth of each well was changed to 35 feet bgs. The completed wells were screened from 15 to 35 feet bgs.

⁷ *Five Groundwater Monitor Wells (MW-1 To MW-5) At The House Of Imports. . . .*, ATC Associates Inc., February 9, 1999, at p. 3. However, the log of the boring indicates that groundwater was initially encountered at a depth of 23.6 feet bgs.

Two of the wells, MW-4 and MW-5, were located within a few feet of the limits of the west side of the former excavation. Wells MW-2 and MW-3 were located within 25 to 30 feet south and southwest (the direction groundwater was believed to flow) of the former excavation, and MW-1 was placed through the excavation back fill, about three feet from the site's active fuel dispenser. Upon completion, the depth to water in each well was about 14 feet bgs. The difference in the elevation of groundwater in the wells after completion, compared to the elevation of "initial" or "first water"⁸ encountered in the well borings led petitioner's consultant to conclude that the shallow groundwater was confined groundwater.⁹ Based on the elevation of the water surface in each well, a southerly groundwater flow gradient was determined.¹⁰

After well development, groundwater samples were collected from each well and analyzed for TPH-g, BTEX, MTBE and TPH-d. Reported concentrations of TPH-d in the samples from wells MW-1, MW-2 and MW-4 were 66 ppm, 133 ppm, and 147 ppm respectively;¹¹ TPH-d was non-detect (<0.5 ppm) in the samples from wells MW-3 and MW-5. Reported concentrations of benzene, toluene and xylene in samples from three of the wells were as follows: MW-1: 8,000 ppb, 33,000 ppb, 21,000 ppb; MW-2: 3,600 ppb, 2,700 ppb, 1,700 ppb; and MW-4: 2,400 ppb, 16,000 ppb, and 26,000 ppb. (See **Attachment 1** for a compilation of groundwater analytical results for samples from all monitor wells at the site. See **Attachment 2** for a compilation of groundwater analytical results for samples from all geoprobes at the site.)

Soil samples from depths of 15 to 35 feet were collected while drilling each well boring and analyzed for TPH-g, BTEX, MTBE and TPH-d. Concentrations of TPH-g detected in these samples ranged from non-detect (< 0.050 ppm) to 350 ppm. The two highest concentrations, 160 ppm

⁸ Initial or first groundwater, as used by the field geologist, designates the first observable occurrence of "free water," i.e., water that flows from the interstices of the soil (this is related to a soil's specific yield and hydraulic conductivity) and identifies the location of a water bearing zone.

⁹ *Id.* at p. 6.

¹⁰ The water level elevation in MW-1 was not used for the gradient determination because the well was installed in the UST backfill (pea gravel) and thus judged to be unrepresentative.

¹¹ The solubility of diesel fuel is about 5 ppm. These reported diesel concentrations (and the concentrations of other constituents in excess of their effective solubilities, e.g., toluene, ethylbenzene, and xylene) indicate that the sample results are not representative of dissolved-phase concentrations but of an emulsion consisting of sorbed and/or liquid-phase petroleum hydrocarbons.

and 350 ppm, were from samples collected from MW-1 at a depth of 35 feet and MW-4 at a depth of 25 feet. All 18 of the soil samples tested non-detect (< 5 ppm) for TPH-d.

In May 2000, four more monitoring wells were constructed. Well MW-6 was sited about 40 feet west of the former excavation and wells MW-7, MW-8, and MW-9 were located in an arc, 10 to 20 feet easterly of the former excavation. The wells were constructed with screen intervals extending from 10 to 35 feet bgs. Soil samples from each well boring were collected at five-foot intervals (5 feet to 35 or 40 feet bgs) and tested in the same manner as previously collected soil samples. Reported concentrations of TPH-g ranged from non-detect to 4.2 ppm; TPH-d and MTBE were non-detect (< 10 ppm and < 0.01 to 0.02 ppm, respectively) in all 32 samples tested. The highest concentrations of TPH-g (4.2 ppm) and BTEX (0.17 ppm, 0.15 ppm, 0.06 ppm, and 0.52 ppm respectively) detected were from a sample collected at a depth of 13 feet in well boring MW-9, located about 15 feet east of the former excavation.

During the drilling of the new wells, the initial occurrence of groundwater was reported at about 19 feet bgs in well borings MW-6 and MW-7¹² and about 28 feet bgs in well borings MW-8 and MW-9. After the wells were completed, the water level in each was about 16 to 17 feet bgs. Analyses of groundwater samples collected from the newly constructed wells showed that detectable concentrations of BTEX were present only at the location of well MW-9 (310 ppb, 380 ppb, 84 ppb, and 620 ppb, respectively), about 15 feet easterly of the excavation.

In February 2001, the County concluded that the assessment of the extent of soil and groundwater impacts was adequate and directed the petitioner to submit a Remedial Action Plan to address the residual petroleum hydrocarbons remaining in site soil and groundwater. In April 2001, petitioner submitted a Corrective Action Plan (CAP) that considered four remediation alternatives:

- Pump and Treat,
- Soil Vapor Extraction,
- Enhanced bio remediation (ORC [Oxygen Releasing Compounds]), and
- No-Action (natural attenuation).

¹² Free groundwater was not detected at this depth (14 feet) in any of the 23 borings drilled at the site in 1998.

Included in the CAP was a site conceptual model that considered the site-specific hydrology, geology, geochemistry, spatial and temporal data trends and anomalies, and the fate and transport of petroleum hydrocarbon constituents from the location of the former USTs to possible receptors via completed or potentially completed environmental pathways. The CAP concluded that the natural attenuation alternative was the reasonable and prudent remediation technology to address public health, safety, and environmental concerns at the site.

By letter dated July 2, 2001, more than 60 days after the submittal of the CAP and still lacking a response of concurrence or objection to the proposed remediation alternative, petitioner notified the County that the proposed No-Action plan was being implemented.¹³ In a letter dated July 13, 2001, petitioner again requested that the County clarify any specific points of disagreement with the conclusions of the CAP. In a letter dated August 20, 2001, the County stated that the SARWQCB would not likely agree to close the site since the maximum benzene concentration in groundwater was over 20 times the SARWQCB's standard. The County also stated that the SARWQCB has agreed to closure in cases where the maximum benzene concentration exceeded the low-risk criteria used by the SARWQCB, but that in those cases, there must be a clear demonstration of a stable plume, limited zone of petroleum hydrocarbon impacts, reasonable removal of the source zone or core of the residual petroleum hydrocarbons, and confirmation of no significant impact to public safety, human or other biological receptors.

In a letter to the County dated December 13, 2001, the SARWQCB provided its rationale for not concurring with site closure. The letter referred to previous discussions between SARWQCB and County staff where it had been determined that additional groundwater monitoring was needed to verify the effectiveness of the implemented CAP. This letter also stated that during the last four years of monitoring, the concentration levels in MW-1 and MW-4 gradually decreased and later began increasing, and that additional monitoring data are necessary to verify that intrinsic biodegradation is effective at the site.

¹³ California Code of Regulations, Title 23, Division 3, Chapter 16, Section 2726(c) provides that "In the interest of minimizing environmental contamination and promoting prompt cleanup, the responsible party may begin cleanup [footnote continued next page]"

On January 28, 2002, the County informed petitioner that the case was transferred to the SARWQCB effective January 24, 2002.

In a letter to the SARWQCB dated February 25, 2002, petitioner requested case closure and submitted a "Closure Summary Report." Petitioner claimed the case should be closed because:

1. The bulk of residual, detectable soil impacts – approximately 350 cubic yards – were removed.
2. The extent of residual detectable petroleum is confined to a very small area.
3. MTBE is not a constituent of concern at the site.
4. Detectable concentrations of petroleum hydrocarbons do not pose a threat to human health, safety or the environment.
5. More data are not necessary to determine the conceptual model of the site.

In a letter to petitioner dated May 6, 2002, the SARWQCB responded. Citing Water Code section 13267, the SARWQCB ordered petitioner "...to conduct groundwater monitoring and to provide [the SARWQCB] with monitoring reports to verify that the contaminant plume is undergoing natural attenuation by intrinsic biodegradation." The determination that additional monitoring was necessary was based on the facts that (i) gasoline constituent concentrations are "...significantly higher than the low-risk criteria..." and (ii) "The latest monitoring data show an increase in the constituent concentrations."¹⁴

On May 28, 2002, petitioner appealed to the SWRCB for case closure. In a letter dated July 17, 2002, the SWRCB UST Program Manager requested the SARWQCB to transmit its record for the site and its response to the petition. The SARWQCB's complete record was sent to the SWRCB UST Program Manager on September 27, 2002.

of soil and water after the Corrective Action Plan has been submitted and before it has received agency concurrence. Implementation of the Corrective Action Plan may begin sixty (60) calendar days after submittal, unless the responsible party is otherwise directed in writing by the regulatory agency."

¹⁴ Data reported for a groundwater sample obtained from well MW-1 on July 18, 2001, showed BTEX and MTBE at 5,800 ppb, 16,000 ppb, 4,100 ppb, 18,600, ppb and 120 ppb, respectively.

III. CONTENTIONS¹⁵ AND FINDINGS

Contention 1: *Petitioner contends that its UST case should be closed because petitioner has verified the effectiveness of the completed CAP to protect human health, safety, and the environment, based upon substantial evidence in the record and in accordance with applicable statutes, regulations, policies and published SWRCB decisions in similar UST cases.*

Response: As explained below, the facts in the record support the finding that petroleum hydrocarbon constituents at petitioner's site do not pose a threat to human health and safety, or the environment. The evidence indicates that the groundwater beneath petitioner's site is confined and that the petroleum release had only localized and limited impacts. The groundwater monitoring wells installed at the site in response to the UST release most likely caused groundwater impacts to be overstated and resulted in misleading characterization of the magnitude of the release. Proper destruction of the site's nine monitoring wells will remedy this situation. Additional soil and groundwater investigation or remediation is not necessary and residual petroleum hydrocarbon constituents in soil at petitioner's site will not adversely affect, or threaten to affect, beneficial uses of groundwater once the wells are destroyed.

The site does not pose a risk to human health, safety or the environment for the following reasons:

- The primary source of the release was removed in 1998, and remaining, limited residual petroleum hydrocarbons in soil are confined to an area within about ten to 15 feet from the limits of the southern half of the former UST excavation in the depth interval of about 13 to 17 feet bgs.
- There is no evidence to suggest that shallow groundwater at and below a depth of 23 feet in the vicinity of petitioner's site is directly being used presently or that it has any likelihood of being used in the foreseeable future for domestic or municipal supply.
- There are no water supply wells located within 2,700 feet of the site.

¹⁵ The SWRCB finds that the issues that are not addressed in this order are insubstantial and not appropriate for SWRCB review. (See *People v. Barry* (1987) 194 Cal.App.3d 158 [239 Cal.Rptr. 349]; Cal. Code Regs., tit. 23, §§ 2052, subd. (a)(1) and 2814.7, subd. (d)(4).)

- The shallow groundwater is non-potable. At petitioner's site, analyses of groundwater revealed the following ambient constituent concentrations: TDS – 3,000 to 3,500 ppm, nitrate – 180 to 240 ppm, sulfate – 780 to 1,300 ppm, sodium – 430 to 630 ppm.¹⁶
- Demonstrated intrinsic biodegradation¹⁷ of residual petroleum hydrocarbons in site soil and groundwater will continue to reduce the mass of those residual hydrocarbons (see discussion below).
- Groundwater exhibits confining conditions limiting downward migration of contaminants (see discussion below).

Discussion

Confining Groundwater Conditions

The SARWQCB contends that the shallow groundwater is unconfined. However, as explained below, the weight of the evidence demonstrates that the hydrogeology at the site has resulted in the shallow groundwater being under confining conditions, which causes it to rise above the elevation where it was first encountered. The high concentrations of petroleum hydrocarbon constituents reported for groundwater samples from site wells are most likely due to the manner in which the wells were constructed and the presence of confining conditions. The lower portions of the wells (20 to 25 feet bgs) are screened across water-bearing intervals; the upper portions of the wells are screened across intervals where soil with residual petroleum hydrocarbons is present. The interconnection of these screened intervals, along with the confining conditions, allows groundwater from the lower portions of the wells to rise and flow into the zone of residual petroleum hydrocarbons in soil. Consequently, when the wells are purged and sampled, contaminants from the zone of residual petroleum hydrocarbon soil impacts are incorporated in the groundwater samples, resulting in analyses that are unrepresentative of a dissolved-phase plume. Evidence of confining conditions includes (1) initial groundwater encountered at or below 23 feet bgs which then rose to 14 feet bgs after completion of the first five

¹⁶ The MCLs for TDS, nitrate, and sulfate, are 500 ppm, 45 ppm, and 250 ppm, respectively; the SARWQCB Basin Plan WQOs are 500 ppm, 3 ppm, and 100 ppm, respectively. The Basin Plan WQO for sodium is 45 ppm.

¹⁷ Lines of evidence that demonstrate biodegradation of residual petroleum hydrocarbons in site soil and groundwater are: (1) constituent concentrations are decreasing both spatially and temporally and (2) the spatial array ("footprint") of geochemical indicators of the biological reactions indicative of active microbial metabolism are present.

wells, (2) temporal and spatial constituent concentration trends in groundwater samples, and (3) site stratigraphy.

A confining layer is a geologic unit having low hydraulic conductivity. Such units are characteristic of clays, silts, sandy silts and clayey sands which typically exhibit a hydraulic conductivity of less than 10^{-5} cm/sec. Groundwater moves through confining layers although the rate is very slow relative to flow in more permeable aquifers. Although the boring logs do not show the presence of a distinct confining layer, they do indicate that the shallow groundwater is at greater than atmospheric pressure (confining conditions). Review of the logs indicates that the stratigraphic column exhibits a “fining upward” gradation: coarse sand with silt at about 30 feet bgs grades to silty fine sand, then grades to clayey fine sand at about 18 feet bgs. This gradation, from coarser sediments at the bottom of the wells to finer-grained sediments closer to the surface, likely represents a decrease in hydraulic conductivity of about two to three orders of magnitude and would account for the confining conditions. The groundwater in the lower portions of the wells (> about 25 feet bgs) is able to flow readily into the well boring and is discernable as free water. At depths less than about 23 feet bgs, due to the decreased intrinsic permeability of the soil, free water is not discernable. Some localized areas of more permeable soils likely exist at depths shallower than 23 feet bgs, but these soils are isolated from the deeper groundwater, except where long-screened monitor wells provide a conduit.

When drilling a soil boring for hydrogeologic site assessment, the field geologist notes the depth that water is initially encountered. This observation identifies the presence of the first water bearing zone encountered in the boring. If the subsequent water level in the well rises above the “first” water, it is an indicator of confining groundwater conditions. In this particular case, that rise was about nine to 14 feet. The first water bearing zone at the site was encountered at or below 23 feet bgs in the 18 Geoprobe® borings drilled in September 1998, the five monitoring wells installed in November 1998, and two of the four monitor wells constructed in May 2000. Under confining conditions, groundwater can rise into a previously unsaturated zone and can affect the depth at which first water will be detected in subsequently drilled borings. The shallower groundwater (at about 19 feet bgs) encountered in the other two May 2000 borings (MW-6 and MW-7) is likely a consequence of groundwater flowing into that zone via the previously constructed wells. Alternatively, this shallower water-bearing zone may indicate the presence of unconfined (“perched”) groundwater in the area of

these two wells. However, analyses of groundwater samples from these wells show no apparent impacts from the release.

The record indicates that groundwater did not rise in the tank excavation to a level of 14 feet bgs. If water table conditions existed at 14 feet bgs, the tank pit would have become filled with 4 feet of standing water, which would have been obvious to the casual observer. In addition, groundwater was not noted at 14 feet in monitor well MW-1 when it was installed, almost four months after the excavation was backfilled. MW-1 was installed through a conductor casing in the tank backfill, and water would have been present at 14 feet when it was installed. In contrast, the boring log for MW-1 states that no soil sample could be recovered at 15 feet bgs because pea gravel collapsed into the boring from the tank backfill and that the lithology from 15 to 20 feet bgs was logged from drill cuttings. If water had been standing in the tank pit for almost four months, those soils would have appeared muddy and clearly saturated and yet the boring log makes no note of this.

The geologist in charge of the well installations and report preparation made the following observations and concluded:

- “Shallow groundwater was encountered initially in a silty fine sand stratum at a depth of approximately 23 to 28 feet bgs.”

- “The shallow groundwater is confined. The hydraulic head was at a depth of approximately 14 feet bgs on 6 November 1998.” (The day after the wells were installed.)¹⁸

Localized Groundwater Impacts

The Geoprobe® groundwater sample data collected in September 1998 suggest some degree of communication between affected soil and shallow groundwater at a depth of about 23 to 26 feet in the immediate area of residual petroleum hydrocarbon soil impacts. Outside the immediate area of residual petroleum hydrocarbon impacted soil, Geoprobe® groundwater sample data generally show very low concentrations (ND to about 3 ppb) of benzene, toluene, and xylene. GP-18 is the exception, with its concentrations being somewhat higher. Based on their distribution, these suggest background water quality not inconsistent with the site setting (i.e., automotive service and adjacent I-5 freeway). If these concentrations are indeed from the UST release, the uniform distribution would indicate that the

¹⁸ ATC Associates, February 9, 1999, page 7.

groundwater gradient is very flat and that diffusion of contaminants may predominate over advective groundwater flow. The low levels would imply that biodegradation is robust. The relative depletion of benzene and ethylbenzene imply that the degradation is aerobic in contrast to the anaerobic degradation profile seen in the groundwater beneath the source area. Based on material contained in the record, it appears that no trip blanks were submitted to the laboratory along with the Geoprobe samples, so neither sample contamination in transit nor lab error can be ruled out as a possible explanation.

Plume Migration

The recent increase in benzene, ethylbenzene, and MTBE in well MW-4 does not appear to be evidence of sudden plume migration after four years of groundwater monitoring, but rather reflects sampling variability from a well screened into a zone containing residual petroleum hydrocarbons. The recent increase in concentrations of benzene, ethylbenzene, and MTBE in this well should be viewed in the context of the well's design and the concentration trends of other petroleum constituents in the well. The concentrations of TPH-g, TPH-d, toluene, and xylene in well MW-4 are at their lowest historic levels and are consistent with a stable plume undergoing anaerobic biodegradation. Furthermore, the tank pit now contains gravel and groundwater with residual petroleum hydrocarbons; any plume migrating from this source in an unconfined aquifer would be at least as wide as the tank pit and would be likely to be detected in groundwater samples from wells MW-3, MW-5, and MW-6, which are in the same direction from the tank pit as MW-4. The weight of the evidence shows that the temporal fluctuations exemplified by well MW-4 are not indicative of petroleum plume migration to adjacent wells, but are rather an indication that the monitoring well design is not appropriate for the hydrogeologic and contaminant conditions at the site.

Currently, the effects on groundwater from the UST release are only evident in groundwater samples from wells MW-1 and MW-4. Initial groundwater samples from the other site wells gave the appearance of wider groundwater impacts, although these impacts rapidly diminished. This rapid depletion of petroleum constituents in groundwater samples from the perimeter wells is likely due to the groundwater rising into contact with a small, relatively isolated mass of petroleum constituents in soil, which quickly biodegraded in the presence of nutrients in that groundwater. These trends, and the persistence of high constituent concentrations in wells MW-1 and MW-4, indicate that significant

groundwater impacts are only apparent where monitoring wells are located in the limited area of residual petroleum hydrocarbon impacted soil.

Biodegradation

Temporal concentration trends and the geochemistry of groundwater samples from site wells demonstrate biodegradation of petroleum hydrocarbons in site soil and groundwater. For example, the initial BTEX, TPH-g and TPH-d concentrations in groundwater sampled from well MW-2 (November 1998) were 2,400, 2,700, 750, 1,700, 15,000, and 133,000 ppb, respectively. Concentrations of these constituents decreased to non-detect in about 24 months. Similar rapid decrease of constituent concentrations (e.g., MW-4 TPH-g, toluene and xylene concentrations: 120,000 to 6,000 ppb, 16,000 to 20 ppb, and 26,000 to 30 ppb, respectively) demonstrate very active biodegradation. Comparison of the concentrations of electron acceptors (e.g., sulfate and nitrate) and the byproducts of biodegradation (e.g., carbon dioxide) in groundwater samples from wells inside and outside the immediate area of affected soil show evidence of the biological reactions occurring in active microbial metabolism. The geochemistry of the groundwater and the decay rates of specific petroleum constituents indicate that anaerobic biodegradation by indigenous sulfate and nitrate reducing microorganisms is occurring. The lack of detectable petroleum constituents in groundwater samples from the perimeter wells and the high ambient concentrations of electron acceptors indicates that intrinsic anaerobic biodegradation is sufficient to contain dissolved-phase petroleum hydrocarbons that may emanate from the area of residual petroleum hydrocarbon impacted soil to the perimeter area.

Groundwater samples from wells MW-1 and MW-4 have historically exhibited and currently exhibit high concentrations of petroleum hydrocarbon constituents. Data from these wells also exhibit a large degree of temporal variation, e.g., sometimes greater than a 100 percent increase or decrease in constituent concentrations from one sampling round to the next. The evidence indicates that these spikes in concentrations, either up or down, are a consequence of the monitor well's overly long screen extending into the zone of residual petroleum hydrocarbon soil impacts and the inherent variability in groundwater sampling. For example, the most recent concentration of benzene reported for the groundwater sample from MW-4 (Aug 2002) was 3,800 ppb, a 150% increase over the concentration (1,500 ppb) for the May 2002 groundwater sample. For the same time frame, benzene concentrations reported for the samples from MW-1 decreased by a factor greater than three (3,900 ppb to 1,200

ppb). Similar swings in constituent concentrations have occurred in the past and will continue in the future as long as the groundwater sampled from these wells remains in intimate contact with residual petroleum hydrocarbons present in shallow soil via the overly-long well screens.

Cleanup Levels

To effectively remove the residual petroleum constituents at petitioner's site in the short term would require further active remediation at a significant cost. The low intrinsic permeability of the soils would limit the effectiveness of vapor extraction and also limit the ability to introduce chemical oxidizing agents. Excavation of the affected soils at 15 to 20 feet bgs would require the removal of the existing UST system and possibly a portion of a building. Even if this remediation were to occur, there would be little benefit to current or anticipated beneficial uses of the limited volume of groundwater that is currently not meeting water quality objectives for the constituents of concern. Because of the minimal benefit of attaining further reductions in concentrations of petroleum constituents at this site and the fact that the use of the groundwater is not affected or threatened, attaining background water quality at petitioner's site is not feasible.

While it is impossible to determine the precise level of water quality that will be attained given the residual petroleum constituents that remain at the site, in light of all the factors discussed above, a level of water quality will be attained that is consistent with the maximum benefit to the people of the state.¹⁹

The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate for this site requires a determination that the alternative level of water quality will not result in water quality less than that prescribed in the Basin Plan. Pursuant to Resolution No. 92-49, a site may be closed if the Basin Plan requirements will be met within a reasonable period.

¹⁹ In approving an alternative level of water quality less stringent than background, the SWRCB has also considered the factors contained in California Code of Regulations, title 23, section 2550.4, subdivision (d). As discussed earlier, the adverse effect on shallow groundwater will be minimal and localized, and there will be no adverse effect on the groundwater contained in deeper aquifers, given the physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the site and surrounding land; and the quantity of the groundwater and direction of the groundwater flow. In addition, the potential for adverse effects on beneficial uses of groundwater is low, in light of the proximity of groundwater supply wells; the current and potential future uses of groundwater in the area; the existing quality of groundwater; the potential for health risks caused by human exposure; the potential damage to wildlife, crops, vegetation, and physical structures; and the persistence and permanence of potential effects.

After the nine monitoring wells are properly destroyed, it could take several decades for the petroleum constituents to meet water quality objectives. That period of time is, however, reasonable because: (1) the shallow groundwater is of poor quality (elevated concentrations of TDS, nitrate, sulfate and sodium) and is an unlikely source of drinking water in the foreseeable future, (2) there are no water supply wells located within 2,700 feet of the site and the nearest surface water feature, the Fullerton Creek storm water conveyance channel, is located about 900 feet to the north, and (3) standard well construction practices for water supply wells mandate a surface sanitary seal to preclude shallow groundwater from entering the well.

Discussion Summary

After the nine monitoring wells are properly destroyed, it is expected that any residual dissolved petroleum introduced through installation and sampling of the wells should rapidly attenuate to below water quality objectives (WQOs) due to the active biodegradation occurring at the site. The site would then be returned to a pre-1998 condition with the uppermost portion of the shallow groundwater in contact with low concentrations of petroleum hydrocarbons that are likely migrating slowly from the overlying confining unit. The relatively stagnant groundwater with its very high concentrations of nitrate and sulfate and anaerobic degraders will counter any apparent plume migration. Residual petroleum hydrocarbons in the shallow soil will persist for a considerably longer period of time. However, because these soils containing residual petroleum hydrocarbons would be effectively isolated from the groundwater due to the tight soils at the site, it will not unreasonably affect existing or anticipated beneficial uses. Any water percolating from the surface, contacting the residual petroleum hydrocarbons in soil or migrating through the tight soil to the groundwater may become contaminated, but this would be expected to rapidly degrade as well.

Contention 2: *Petitioner contends that failing to close the UST case has unnecessarily delayed the proper destruction of inappropriately long-screened monitoring wells that were located within the lateral and vertical limits of residual soil impact. Petitioner contends that the construction and location of these wells (MW-1 and MW-4) have allowed confined groundwater to rise under pressure into direct contact with residual petroleum adsorbed to previously-unsaturated soils above the water-bearing zone and has resulted in reported concentrations that are erroneous and misleading and continue to pose an unreasonable threat to*

the surrounding environment. Petitioner contends that the County specified the number of monitoring points, the location of monitoring wells and manner in which the monitoring wells were to be constructed, and that these specific County directives violated California Water Code, section 13360.

The SARWQCB contends that the monitor wells are properly designed and constructed.

Response: As discussed in Contention 1, a preponderance of evidence in the record indicates that shallow site groundwater is groundwater under confining conditions. Corroboration or denial of the SARWQCB's conceptual model of unconfined groundwater and proper well construction would necessitate the destruction of the existing monitor wells and their replacement with nested wells (i.e., clusters of two or three wells designed to monitor groundwater at different discrete depth intervals).

Guidance and standards²⁰ for assessment well construction specify that a well's annular space be effectively sealed to prevent it from becoming a preferential pathway for the movement of poor quality water, pollutants, and contaminants or a conduit for contaminate transport across hydraulically separated geologic units. The design of the site's nine monitoring wells, with screen lengths of 20 to 25 feet across separate hydrogeologic units, allows shallow groundwater, under confining conditions, to rise in the wells and flow into the zone of hydrocarbon impacted soil. As a consequence of their location and design, the monitoring wells will continue to provide a conduit for the spread of petroleum hydrocarbon constituents until they are destroyed.

With exceptions not relevant here, Water Code section 13360 prohibits the SWRCB, RWQCBs and courts from issuing orders pursuant to Division 1 of the Water Code that specify the design, location, type of construction or particular manner in which compliance may be had with a requirement, order or decree. Section 13360 does not apply to local agencies. And while Chapters 6.7 and 6.75 provide local agencies with authority to oversee corrective action at leaking UST sites, there is no similar restriction that prohibits local agencies from specifying the manner or method of complying with cleanup orders. As indicated earlier, the County participates in the Local Oversight Program and,

²⁰ *Guideline for Hydrogeologic Characterization of Hazardous Substance Release Sites*, Cal/EPA, July 1995; *Bulletin 74-90, Water Well Standards*, Department of Water Resources, June 1991.

as such, operates under a contract with the SWRCB. The contract between the SWRCB and the County does not specifically prohibit the County from directing the method or manner of compliance with cleanup orders. Rather, the contract contains generic language that requires the County to comply with all applicable state laws, rules, regulations and local ordinances. Since Water Code section 13360 does not apply to the County, this contract provision would not bar the County from dictating the manner of compliance. Thus, even if we determined that the County specified the design and location of the monitor wells, petitioner's contention, that the County violated Water Code section 13360, has no merit.

Contention 3: *Petitioner claims that the SARWQCB inappropriately based its decision to deny closure on the fact that the concentration levels at petitioner's site exceeded low-risk concentration levels for BTEX that the SARWQCB had established. Specifically, petitioner contends that the SARWQCB's reliance on the guidance document violates Government Code section 11340.5, which prohibits a state agency from using a guideline, criterion, or standard unless the criterion or standard has been formally adopted as a regulation.*

Response: In light of our technical analysis of petitioner's UST case and our conclusion that the UST case should be closed, it is not necessary to determine if the SARWQCB's use of the low-risk criteria was inappropriate.

IV. SUMMARY AND CONCLUSIONS

After an independent review of the record and consideration of the issues raised by the petitioner, and for the reasons previously discussed, we conclude the following:

1. Petitioner's site is a "low risk" site for the following reasons:

A. No water supply wells are located within 2,700 feet of the site and the nearest surface water feature, the Fullerton Creek storm water conveyance channel, is located about 900 feet to the north.

B. The shallow groundwater is of poor quality containing elevated concentrations of TDS, nitrate, and sulfate above MCLs and Basin Plan Water Quality Objectives. Concentrations of sodium in that groundwater also exceeds Basin Plan Water Quality Objectives.

C. The bulk of soil containing residual petroleum hydrocarbons was removed in 1998.

D. Residual petroleum hydrocarbons in soil are confined to a small, limited area.

E. MTBE is not a constituent of concern.

F. The apparent plume and constituent concentrations are stable and decreasing.

G. Demonstrated intrinsic biodegradation will continue to reduce the remaining, limited mass of petroleum hydrocarbons in soil and groundwater.

2. Improperly constructed monitoring wells and confining groundwater conditions have allowed groundwater in the lower portions of the wells to rise and come into direct contact with the limited volume of shallower soil containing detectable concentrations of residual petroleum constituents. This has exacerbated groundwater impacts.

3. Intrinsic permeabilities of shallow soils at the site are low enough to create confining pressure to groundwater that occurs below about 23 feet bgs. The low intrinsic permeability of these soils also retards the vertical and horizontal migration of residual petroleum constituents in soil and dissolved in groundwater.

4. Plan Water Quality Objectives for petroleum hydrocarbons currently detected in site groundwater will likely be achieved within several decades after the monitor wells are properly destroyed. This is a reasonable period because there are no nearby water supply wells; it is unlikely that the shallow groundwater will be used as a source of drinking water due to its poor quality; and standard well construction practices for water supply wells mandate a surface sanitary seal to preclude shallow groundwater from entering the well should one be installed to access deeper groundwater.

5. The level of site cleanup, which included removal of the USTs and approximately 350 cubic yards of affected soil in 1998, and groundwater monitoring, is consistent with the maximum benefit to the people of the State.

6. The site's nine monitoring wells must be properly destroyed to restore the natural barrier separating residual petroleum hydrocarbons present in shallow soil from underlying groundwater, which is under confining conditions.

7. Once the monitoring wells are properly destroyed, no further corrective action is necessary.

8. The above conclusions are based on the site-specific information relative to this particular case.

V. ORDER

IT IS HEREBY ORDERED THAT, following the proper destruction of the site's nine monitoring wells, petitioner's UST case be closed, and no further action related to the release be required. Once the monitoring wells are properly destroyed, the Chief of the Division of Water Quality is directed to issue petitioner a uniform closure letter consistent with Health and Safety Code, section 25299.37, subdivision (h).

CERTIFICATION

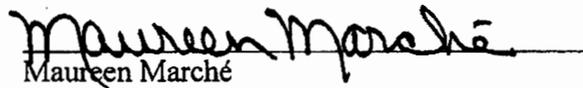
The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on February 19, 2003.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz
Gary M. Carlton

NO: None

ABSENT: None

ABSTAIN: None


Maureen Marché
Clerk to the Board

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER: WQ 2005-0002-UST

In the Matter of the Petition of

LOIS GREEN AND PATRICIA KELLY

For Review of Denial of Petroleum Underground Storage Tank Site Closure
1010 Broadway Avenue (Canton Cafe Site), Eureka, California

BY THE BOARD:

Lois Green and Patricia Kelly (petitioners) seek review of the decision of the Humboldt County Local Oversight Program (County) not to close petitioners' case involving an unauthorized release of petroleum at their site located at 1010 Broadway Avenue, Eureka, California. For the reasons set forth below, this Order determines that petitioners' case should be closed and no further action related to the release should be required.

I. STATUTORY AND REGULATORY BACKGROUND

Owners and operators of underground storage tanks (USTs) and other responsible parties may petition the State Water Resources Control Board (SWRCB) for a review of their case if they feel the corrective action plan for their site has been satisfactorily implemented, but closure has not been granted. (Health and Saf. Code, § 25296.40, subd. (a)(1).) The SWRCB has adopted regulations that govern the site closure petition process. (See California Code of Regulations, Title 23, Chapter 18, Article 6.)

Several statutory and regulatory provisions provide the SWRCB, Regional Water Quality Control Boards (RWQCB) and local agencies with broad authority to require responsible parties to clean up a release from a petroleum UST. (e.g., Health & Saf. Code, § 25296.10; Wat. Code, § 13304, subd. (a).) The SWRCB has promulgated regulations specifying corrective action requirements for petroleum UST cases (Cal. Code Regs., tit. 23, §§ 2720-2728). The regulations define corrective action as "any activity necessary to investigate and analyze the effects of an unauthorized release, propose a cost-effective plan to adequately protect human health, safety and the environment and to restore or protect

current and potential beneficial uses of water, and implement and evaluate the effectiveness of the activity (ies)." (Cal. Code Regs., tit. 23, § 2720.) Corrective action consists of one or more of the following phases: (1) preliminary site investigation, (2) soil and water investigation, (3) corrective action plan implementation, and (4) verification monitoring. (Cal. Code Regs., tit. 23, § 2722, subd. (a).)

The preliminary site assessment phase includes initial site investigation, initial abatement actions, initial site characterization and any interim remedial action. (Cal. Code Regs., tit. 23, § 2723, subd. (a).) Corrective action is complete at the conclusion of the preliminary site assessment phase, unless conditions warrant a soil and water investigation. A soil and water investigation is required if any of the following conditions exists: (1) There is evidence that surface water or groundwater has been or may be affected by the unauthorized release; (2) Free product is found at the site where the unauthorized release occurred or in the surrounding area; (3) There is evidence that contaminated soils are, or may be in contact with surface water or groundwater; or (4) The regulatory agency requests an investigation based on the actual or potential effects of contaminated soil or groundwater on nearby surface water or groundwater resources, or based on the increased risk of fire or explosion. (Cal. Code Regs., tit. 23, § 2724.) The purpose of a soil and water investigation is "to assess the nature and vertical and lateral extent of the unauthorized release and to determine a cost-effective method of cleanup." (Cal. Code Regs., tit. 23, § 2725, subd. (a).)

SWRCB Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code §13304* also applies to petroleum UST cases. Resolution No. 92-49 directs that water affected by an unauthorized release attain either background water quality or the best water quality that is reasonable if background water quality cannot be restored. (SWRCB Resolution No. 92-49, Section III.G.) Any alternative level of water quality less stringent than background must be consistent with the maximum benefit to the people of the state, not unreasonably affect current and anticipated beneficial use of affected water, and not result in water quality less than that prescribed in the water quality control plan for the basin within which the site is located. (*Ibid.*)

Resolution No. 92-49 does not require, however, that the requisite level of water quality be met at the time of site closure. Resolution No. 92-49 specifies compliance with cleanup goals and objectives within a reasonable time frame (*Id.* at section III.A.). Therefore, even if the requisite level of

water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable period.¹

The North Coast Regional Water Quality Control Board's (North Coast RWQCB) Water Quality Control Plan (Basin Plan) designates municipal and domestic supply (MUN) beneficial use for groundwater in the Eureka Plain Hydrologic Unit pursuant to SWRCB Resolution 88-63.² The Basin Plan specifies a narrative taste and odor water quality objective (WQO) for groundwater as follows: "Groundwaters shall not contain taste- or odor-producing substances at concentrations which cause nuisance or adversely affect beneficial uses" (*Id.* at p. 3-11.) The Basin Plan also contains the following narrative WQO for Chemical Constituents: "Groundwaters used for domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the limits cited in CCR, Title 22, Division 4, Chapter 15, Article 4, Section 64435 Tables 2 and 3, and Section 64444.5 (Table 5) and listed in Table 3-2 of this Plan. Groundwaters used for agricultural supply (AGR) shall not contain concentrations of chemical constituents in amounts that adversely affect such beneficial use." (*Id.* at p. 3-11.)

With regard to the WQOs for Chemical Constituents, the Basin Plan has set "Concentrations Not To Be Exceeded In Domestic or Municipal Supply" for benzene, ethylbenzene, and xylene at 1 ppb, 680 ppb, and 1,750 ppb, respectively (*Id.* at p. 3-8). The threshold odor concentration of three common petroleum constituents, ethylbenzene, toluene, and xylene are 29 ppb, 42 ppb, and 17 ppb respectively. (U.S. EPA, Federal Register, Volume 54, No.97, May 1989.) The threshold odor concentration of commercial gasoline (measured as total petroleum hydrocarbon gasoline, or TPH-g) is commonly accepted to be 5 ppb, with 10 ppb giving a strong odor. The threshold odor concentration of commercial diesel (measured as TPH-d) is commonly accepted to be 100 ppb. (SWRCB, Water Quality Criteria (2d ed. 1963) p. 230.). DHS has set primary and secondary MCLs for methyl-tertiary-butyl-ether (MTBE) at 13 ppb and 5 ppb, respectively.

¹ See for example SWRCB Orders WQ 98-04 UST, WQ 98-10 UST, and WQ 03-0001 UST.

² "Water bodies within the Region that do not have beneficial uses designated for them in Table 2-1 are assigned MUN designations in accordance with the provisions of State Water Resources Control Board Resolution No 88-63 'Sources of Drinking Water' policy (Appendix Section of this plan) which is, by reference, a part of this plan. These MUN designations in no way affect the presence or absence of other beneficial use designations in these water bodies." (Basin Plan, p. 2-1.00.)

II. FACTUAL BACKGROUND

A. Site Setting

Petitioners' site is located at 1010 Broadway Avenue (US Highway 101), Eureka, California (Figure 1, Site Location Map) within the Eureka Plain Hydrologic Unit. The site contains a restaurant and an associated parking lot situated in the commercial/industrial area (locally referred to as the "West Side Industrial Area") immediately adjacent to the highway. Down-gradient land use includes a lumber mill and associated log decks and rail yard. An up-gradient gasoline service station undergoing active corrective action is located across the highway (east) from the site and a closed UST site abuts petitioners' site to the north. There are no municipal supply wells located within the City of Eureka.³ The nearest surface water feature, Humboldt Bay, is located about 2,300 feet to the west. Five idle domestic wells have been identified within 1,000 feet up-gradient (east) of the site.⁴

Soils encountered at the site to a depth of about six to ten feet are a mixture of bay mud and imported, unengineered fill and are described on logs of borings as gray to gray-brown sandy silty clay, sandy clay, clayey silt and clayey sand with frequent inclusions of wood fragments or other organic material.⁵ These fine-grained sediments overlie gray, dense, poorly sorted sand with fine gravel that is locally mapped as the Hookton Formation. The Hookton Formation is reported to be of fluvial origin, consisting of reddish-brown to yellowish-brown loosely consolidated clay, sand, and gravel, and yields small to moderate amounts of groundwater to wells from sand and gravel strata.⁶ Wells that are completed in the Hookton Formation a mile or two north of Eureka are reported to be artesian wells, i.e., the groundwater is under confining conditions.⁷

Groundwater at the site is shallow and is typically encountered in borings at three to seven feet below ground surface (bgs). Perched groundwater is encountered in the western half of the site, occurring at two to three feet bgs. The shallow groundwater flows in a generally west to northwesterly

³ The City relies on surface water from the Mad River for its municipal supply. The facility used to divert surface water from the river is located about nine miles north of the City.

⁴ *Results of Domestic Well Survey, Preferential Pathway Evaluation, Former Broadway Shell, 1007 Broadway Avenue*, LACO Associates, June 28, 2001. These wells are likely shallow wells and more than 40 to 50 years old. A review of Well Driller's Reports on file at the Department of Water Resources Northern District office indicates that no domestic supply wells have been drilled within a one-mile radius of the site since 1960. There are no reports on file for the five subject wells.

⁵ Historically, the area from the site to the present day edge of the bay was a tidal mud flat.

⁶ *Geology and Ground-Water Features of the Eureka Area*. USGS Water Supply Paper 1470, R.E. Evenson, 1959.

⁷ *Ibid.*

direction towards the bay. Rainfall runoff, subsurface inflow from the Hookton Formation, and exfiltration from storm sewers are the expected shallow groundwater recharge sources.

B. UST Case History

The site was the location of a gasoline service station in the 1950's through 1962. The current restaurant was built at the site in 1964. There is no documentation indicating when the USTs were removed however, none were found in 1990 when the area where the USTs had been located was excavated to a depth of about eight feet. A soil sample collected from this excavation contained 140 ppm TPH-g; benzene, toluene, ethylbenzene, and xylene (BTEX) were non-detect. Continued excavation removed about 100 feet of piping. A soil sample from this portion of the excavation contained 1.8 ppm TPH-g while BTEX were non-detect. A total of about 50 cubic yards of soil was removed. Analysis of a groundwater sample from the piping portion of the excavation showed non-detect concentrations for all constituents; a groundwater sample from the presumed tank area had a TPH-g concentration of 760 ppb and BTEX concentrations of non-detect, 7 ppb, 23 ppb, and 16 ppb, respectively. The excavation was subsequently back-filled with clean fill. The location of the UST excavation and monitor wells and borings is shown on Figure 2, Monitor Well Location Map.

Between June 1991 and July 1997, five phases of site characterization corrective actions were undertaken, culminating in the submittal of a Corrective Action Plan (CAP) in March 1998. The CAP proposed excavation of three areas of the site and the placement/injection of oxygen releasing compounds (ORC) to enhance in-situ biodegradation of remaining residual petroleum hydrocarbons. The County approved the CAP in June 1998. In May 1999, approximately 530 cubic yards of affected soil was excavated. Soil samples collected from the sidewalls of the excavations were analyzed for TPH-g, TPH-d, TPH-mo⁸, BTEX and MTBE to assess the efficacy of the removal action (Figure 3, TPH in Soil). Soil samples collected at a depth of seven to eight feet from the side walls at the bottom of the excavation at the eastern portion of the site (along Highway 101) had reported concentrations of TPH-d ranging from non-detect to 31 ppm, TPH-g ranging from non-detect to 110 ppm, TPH-mo ranging from non-detect to 84 ppm, BTEX ranging from non-detect to 0.049 ppm, and MTBE was non-detect for all samples. Soil samples collected at a depth of about three feet from the sidewalls at the bottom of the excavation near the northwestern portion of the site had reported concentrations of TPH-d ranging from non-detect to 13 ppm, TPH-g ranging from non-detect to 250 ppm, TPH-mo ranging from non-detect to 19 ppm, and BTEX and MTBE were non-detect for all samples. Three soil samples collected from the base and sidewalls of the excavation near the center of the site were non-detect for all petroleum hydrocarbon constituents except

for one with 22 ppm TPH-mo. ORC was placed in the bottoms of the excavations at the eastern and northwestern portions of the site prior to backfilling with clean fill material.

In May 1999, monitor wells MW-1 and MW-5, which were destroyed during the March soil excavation activity, were replaced (MW-1A and MW-5A), and a seventh well (MW-7) was constructed at the northwest corner of the site. In April 2000, at the request of the County, an additional monitor well (MW-8) was constructed near the western site boundary to characterize groundwater conditions down-gradient of well MW-2. A soil sample from five feet bgs in this boring had a reported TPH-d concentration of 3.6 ppm and TPH-mo concentration of 71 ppm; TPH-g, BTEX, and MTBE were non-detect.

In August 2000, in accordance with the approved CAP, ORC was injected into shallow soil and groundwater along three transects normal to the groundwater flow direction (Figure 4, CAP Implementation). Verification groundwater monitoring conducted subsequent to the ORC injection has shown that detectable concentrations of TPH-g range from non-detect in samples from wells MW-2, MW-6, and MW-7 to 730 ppb⁹ in samples from well MW-1A. Detectable concentrations of TPH-d range from non-detect in samples from wells MW-6 and MW-7 to 750 ppb¹⁰ in samples from well MW-4. A silica gel clean-up of a recent groundwater sample from well MW-5A showed that two thirds of the organic constituents reported as TPH-d were polar non-hydrocarbons, e.g., organic acids, alcohols, and ketones derived from the decomposition of organic material present in soil.¹¹ Detectable concentrations of benzene (no higher than 18 ppb), ethylbenzene (no higher than 5.5 ppb), xylene (no higher than 7.1 ppb), and MTBE (no higher than 3.5 ppb) occur only in samples from well MW-1A.

In October 2001, petitioners requested that the County close the case, citing the corrective actions completed at the site, stability of the petroleum hydrocarbon plume, and active biodegradation of residual petroleum hydrocarbons in site soil and groundwater. The County denied the request in January 2002, citing the need for a site conceptual model. Petitioners appealed the County's decision to the SWRCB on June 3, 2002. On June 11, 2002, the County restated its closure denial, citing groundwater

⁸ A measure of petroleum hydrocarbons molecules characteristic of motor oil.

⁹ These analyses are typically accompanied with the laboratory caveat "Samples do not have the typical pattern of fresh gasoline. However, the results reported represent the amount of material in the gasoline range."

¹⁰ These analyses are typically accompanied with the laboratory caveat "Samples contain material similar to degraded or weathered diesel oil."

¹¹ The sample had a reported TPH-d concentration of 240 ppb before the silica gel clean up and 80 ppb after the clean up.

sample concentrations of TPH-d from five wells, concentrations of TPH-g in four wells, and the benzene concentration in one well, all of which exceed MUN beneficial use WQOs.

III. CONTENTIONS AND RESPONSES

A. CONTENTIONS

Petitioners contend that they have successfully implemented the CAP that was approved by the County and that residual petroleum hydrocarbon constituents remaining in site soil and groundwater present a low risk to public health, safety, and the environment.

County staff contend that the UST case cannot be closed because petroleum hydrocarbon constituents detected in groundwater samples from various site monitor wells exceed the North Coast RWQCB's Basin Plan WQOs for municipal and domestic supply beneficial uses.

B. RESPONSE

For purposes of our analysis, we apply WQOs that protect a MUN beneficial.¹² As explained below, the facts in the record support the finding that the CAP was successfully implemented and that additional soil and groundwater investigation is not necessary. Further, residual petroleum hydrocarbon constituents in shallow soil and groundwater at the petitioners' site do not pose a threat to human health and safety, or the environment, and do not adversely affect current or anticipated beneficial use of water for the following reasons:

- The primary source of the release, the USTs, was apparently removed circa 1964. Later, 580 cubic yards of substantially affected soil was removed (50 cubic yards in 1990, 530 cubic yards in 1999).
- There is no evidence that groundwater at or down-gradient of petitioners' site is being used presently or that it has any likelihood of being used in the future, for domestic or municipal supply.

Additionally, the level of site cleanup is consistent with the maximum benefit to the people of the state and the remaining petroleum hydrocarbons in shallow site groundwater will meet MUN beneficial use WQOs within a reasonable period of time.

¹² As indicated earlier, the RWQCB applies MUN beneficial use to this groundwater pursuant to the Basin Plan and SWRCB Resolution 88-63.

C. DISCUSSION

1. Source Removal: The primary source of the release has been removed, presumably around 1964, and residual petroleum hydrocarbons in soil have been: (1) removed to the extent practicable, (2) reduced through natural attenuation processes to non-detect levels, or (3) degraded to low but detectable concentrations adsorbed to soil. These weathered residual petroleum hydrocarbons have such low solubility that they could not contribute dissolved petroleum constituents to groundwater in concentrations that impair existing or probable future beneficial uses. Of the more than 50 soil samples analyzed from numerous soil borings and the three areas excavated prior to the addition of ORC, only 11 had detectable concentrations of benzene (as high as 0.23 ppm), toluene (as high as 0.11 ppm) ethylbenzene (as high as 6.1 ppm) and/or xylene (as high as 0.79 ppm). These constituents are the most soluble and mobile petroleum hydrocarbons of concern. In contrast, concentrations of TPH-g as high as 140 ppm, TPH-d as high as 500 ppm and/or TPH-mo as high as 2,000 ppm were detected in these samples.¹³ These facts indicate well-advanced degradation of residual petroleum constituents consistent with a 40 to 50 year old release. Areas of the site where samples indicated detectable BTEX concentrations were addressed by the CAP and, to the extent practicable, over excavated in 1999 or targeted with the placement of ORC in 1999 and 2000. No detectable concentrations of dissolved phase BTEX were present in groundwater samples from six of the seven site monitor wells. Only low concentrations of benzene (<0.5 to 18 ppb in 2003) and ethylbenzene (0.85 to 5.5 ppb in 2003) were present in groundwater samples from the well constructed in the former UST excavation (MW-1A)¹⁴ adjacent to Highway 101. Together, this information provides substantial evidence of very limited and localized groundwater impacts remaining from a very old release.

2. Maximum Benefit to the People of the State. Removal of all traces of residual petroleum hydrocarbon constituents contributing to observed concentrations in shallow groundwater would require additional excavation of soil to a depth of about six to eight feet across virtually the entire site and within the Highway 101 right-of-way, i.e., all of the bay mud and imported, unengineered fill containing wood fragments and other organic material. However, while complete removal of detectable traces of TPH-g, TPH-d, and TPH-mo constituents in site soil may be technically feasible, it is not economically feasible. In light of the fact that current or anticipated beneficial uses of groundwater are not threatened, that there is interference preventing accurate TPH analyses of soil and groundwater samples caused by polar non-hydrocarbons derived from decomposition of wood wastes and other organic material present in the

¹³ As discussed later, a large fraction of the organic constituents reported as TPH are polar non-hydrocarbons.

¹⁴ Concentrations of BTEX in groundwater samples from this well were non-detect for the October 2002 and January 2003 quarterly groundwater sampling events; benzene and ethylbenzene were detected at concentrations of 1.9 ppb and 0.85ppb, respectively, in April 2003.

shallow soil¹⁵, and that there is an ever present source of additional low concentration petroleum hydrocarbon impacts (rainfall runoff from the highway), attaining background water quality is not feasible. It is impossible to determine the precise level of water quality that will be attained given the limited residual petroleum hydrocarbon constituents and decaying organic material in soil that remain at the site and within the Highway 101 right-of-way, but in light of all the factors discussed above, a level of water quality will be attained that is consistent with the maximum benefit to the people of the state.

3. Current and Anticipated Beneficial Uses. The remaining concentrations of TPH-g (50 ppb to about 1,000 ppb) and TPH-d (100 ppb to about 500 ppb) (Figure 5, TPH in Groundwater) in shallow groundwater in immediate contact with residual TPH-g and TPH-d adsorbed to soil will likely remain above MUN beneficial use WQOs in a localized volume of surrounding groundwater for a significant period of time. Similarly, concentrations of benzene (benzene is the only BTEX constituent detected in groundwater samples that exceeds MUN beneficial use WQOs and seasonally fluctuates between non-detect and about 20 ppb at the site) in shallow groundwater in the vicinity of well MW-1A will also remain above MUN beneficial use WQOs in a very localized volume of surrounding groundwater for a significant period of time. Municipal and domestic supply beneficial use WQOs for benzene are met within 40 feet down-gradient of the location of the former USTs. Such a limited, isolated scenario will not unreasonably affect existing or anticipated beneficial uses.

In approving alternative levels of water quality less stringent than background, the SWRCB considers the factors contained in CCR, title 23, section 2550.4, subdivision (d). As discussed earlier, the adverse effect on shallow groundwater will be minimal and localized, and there will be no adverse effect on the groundwater in deeper aquifers, given the physical and chemical characteristics of the petroleum constituents, the hydrogeologic characteristics of the site and surrounding land, and the quantity of groundwater and direction of groundwater flow. In addition, the potential for adverse effects to beneficial uses of groundwater is low, given: (1) that nearby, up-gradient water supply wells are not being used; (2) the current and potential future uses of groundwater in the area; (3) the potential for health risks caused by human exposure; (4) the potential damage to wildlife, crops, vegetation, and physical structures; and (5) the persistence and permanence of potential effects, i.e., the environmental fate of the remaining, residual hydrocarbons in site soil and groundwater. Further, a level of water quality less stringent than background is unlikely to have any impact on surface water quality for these same reasons.

¹⁵ The regulatory criteria for TPH in groundwater (5 ppb for gasoline and 100 ppb for diesel) is based on the presence of dissolved-phase petroleum hydrocarbons. Because the TPH analysis does not discriminate between petroleum hydrocarbons and organic nonpetroleum compounds, use of these criteria are technically inappropriate at this particular site.

4. Compliance with Basin Plan Requirements. The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate for this site requires a determination that the alternative level of water quality will not result in water quality less than that prescribed in the relevant Basin Plan. Pursuant to SWRCB Resolution No. 92-49, a site may be closed if the Basin Plan requirements will be met within a reasonable time frame. Concentrations of TPH-g and TPH-d in shallow groundwater in immediate contact with the limited residual petroleum constituents adsorbed to soil will likely remain above their respective 5 ppb and 100 ppb odor thresholds in a localized volume of surrounding groundwater for a significant period of time. This time period will likely be anywhere from a few decades to hundreds of years given that a large proportion of the organic constituents reported as TPH are in fact polar nonhydrocarbons. Concentrations of benzene will likely remain above WQOs for a decade or two. Nonetheless, during this time the residual TPH-g, TPH-d and benzene concentrations above the WQOs detected in shallow groundwater will not pose a threat to current or anticipated beneficial uses.

The limited area where groundwater exceeds MUN beneficial use WQOs is located in the commercial/industrial area adjacent to Highway 101 and it is highly unlikely that a water supply well will be installed at the site or near this area during the period that MUN WQOs are exceeded. Even if that unlikely event occurred, standard well construction practices would prevent the shallow affected groundwater from having any adverse effect on deeper aquifers. Further, it is highly unlikely that TPH-g, TPH-d or benzene detected in site groundwater will migrate substantially beyond its current limited spatial extent. Though the longer chain hydrocarbons comprising TPH-g and TPH-d biodegrade more slowly than certain petroleum constituents, such as benzene, they are more recalcitrant and much less mobile (i.e., less volatile, less soluble, and highly absorbent). Thus, the significant period of time that it will take for water quality in this limited area to meet MUN beneficial use WQOs is a reasonable time frame. Closure of the site, given the facts in this particular case, is appropriate.

IV. SUMMARY AND CONCLUSIONS

1. Residual concentrations of petroleum hydrocarbons, including benzene, at petitioners' site have degraded, and will continue to degrade, due to natural attenuation.
2. Petitioners' site is located in an industrial and commercial area. Surface water sources provide the entirety of the City of Eureka's municipal water supply. No active water supply wells have been identified within a 1,000 feet down-gradient of the site and the nearest surface water body (Humboldt Bay) is 2,300 feet away.
3. For the purpose of considering site closure, we apply WQOs that protect a MUN beneficial use.
4. Given the low permeability and shallowness of the affected water-bearing soils at petitioners' site and minimum well construction standards that require 50 foot sanitary seals in municipal supply wells, the residual, detectable concentrations of highly weathered petroleum hydrocarbons do not pose a threat to human health and safety, or the environment, and do not adversely affect current or probable future beneficial uses of water.
5. Soil and groundwater investigations at petitioners' site have been adequate to delineate contamination.
6. The level of site cleanup is consistent with the maximum benefit to the people of the state.
7. Detectable TPH-g (up to about 1,000 ppb) and TPH-d (up to about 500 ppb) in shallow groundwater in immediate contact with the limited, weathered residual petroleum hydrocarbons adsorbed to soil particles will likely remain above MUN beneficial use WQOs (5 ppb and 100 ppb, respectively) and thus exceed those objectives in a localized, small volume of surrounding groundwater for decades. Benzene concentrations (up to about 20 ppb) will likely remain above MUN beneficial use WQOs in a very localized area (within 40 feet down-gradient of the location of the former USTs) of groundwater for a decade or two.
8. The determination as to what constitutes a reasonable period must be based on evaluation of all relevant factors, including but not limited to the extent and gravity of any threat to public health and the environment during the period required to meet Basin Plan objectives. Although the time required to attain objectives in this particular case is lengthy, it is a reasonable period considering the facts of this case, including that there are no known drinking water wells within 1,000 feet down-gradient of the site; it is highly unlikely that TPH-d, TPH-g, and benzene detected in localized areas of the site will migrate substantially beyond the current limited spatial extent; and it is highly unlikely that this particular very limited area of shallow groundwater will be used directly as a source of drinking water.

9. Therefore, no further corrective action is necessary.
10. The above conclusions are based on the site-specific information relative to this case.

V. ORDER

IT IS THEREFORE ORDERED that petitioners' case be closed and no further action related to the UST be required. The Chief of the Division of Water Quality is directed to issue petitioners a closure letter consistent with Health and Safety Code, section 25296.10, subd. (g)

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on January 20, 2005.

AYE: Arthur G. Baggett, Jr.
 Peter S. Silva
 Richard Katz
 Gary M. Carlton
 Nancy H. Sutley

NO: None.

ABSENT: None.

ABSTAIN: None.


Debbie Irvin
Clerk to the Board